ORTHOPAEDICS IN GENERAL PRACTICE

IS IT RHEUMATISM DOCTOR ?

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PREFACE

I spent my nights and days with hogs
I shared my milk and maize with hogs
But I reckon I know what pays with hogs
And I ve got that knowledge to sell

—*Rudyard Kipling*

WHEN I started my career pure consultants were rare in the provinces and the only possible method of earning bread and butter for a wife and family was as a G P surgeon in a country town with a cottage hospital I very soon got on the staff of a general hospital of a nearby town After a few years I moved to a larger town with a larger hospital gradu ally specialised in orthopaedic surgery gave up general practice and got on the staff of other hospitals

I mention these details because they are the excuse for writing this book While in general practice I observed how great a proportion of one s work was really orthopaedic I refer particularly to the minor aches and pains of this life When however one lives with one s patients and sees them daily in their houses one realizes the truth of the old proverb it s the little things that try us I thus developed an interest in the trivial things which I have retained ever since

Unfortunately the subject of minor aches and pains re ceives scant attention in the medical curriculum and as a result the ancient custom of disguising ignorance under the cloak of pseudo classical names has persisted for these con ditions Patients have adopted this practice in addition to

doctors and now nobody ever complains of pain but instead suffers from fibrositis neuritis lumbago or else asks the eternal question

Is it Rheumatism Doctor?

What is the answer to this question? Every magazine has advertisements purporting to give the answer with diverse and wonderful cures Nearly every patient past middle life says he has a touch of rheumatism here or there If you tell the patient he is not suffering from rheumatism he is incredulous and will want to know what he is actually suffering from After an explanation lasting half an hour he will then say Oh you really mean rheumatism If you tell the patient he is suffering from rheumatism are you telling the truth? What is rheumatism? The following definition may be rather unkind but surely is accurate Rheumatism is an old term which has been handed down through the generations for pain in the back limbs or joints By using this term we avoid the trouble of having to think and decide what is the cause of the pain There are a number of similar terms used in medicine which are thus examples of loose thinking or perhaps really not thinking at all

This book is an attempt to show that a very high proportion of the painful conditions that patients call rheumatism are not a disease at all but are the results of bad posture misuse and bad maintenance of that wonderful machine the human body We spend most of our lives wearing our bearings in one position in this flexed and sedentary civilization and we never stretch as animals do to maintain the greasing of our bearings

Considered in this way rheumatism and many terms like it all come in the category of terms to be avoided It is our job to cure our patients and not fob them off with obsolete

terms Not only should we cure them but if as it is claimed to be this is an organized health service it should really be organized and set about preventing these conditions and as will be shewn many are preventable

The scope of this book therefore covers to a large extent the field of what might be termed the minor orthopaedics of general practice This includes pain in the neck and upper extremity the back the treatment of minor injury and lastly a rational outlook on foot troubles

I wish to thank Edmund Shephard my colleague at the West Kent Hospital for his most valued criticism and help

The line drawings which I hope will relieve the tedium of the subject matter are by Mr Frank B Price I am most grateful to him for combining accuracy with humour in the various postures

W H G

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COMPLAINTS of rheumatism in the neck shoulders and arms neuritis down the arm fibrositis of upper dorsal region and shoulder girdles are frequently heard

Let us consider such a case with pain running down the arm The patient will of course ask the time honoured question

Is it rheumatism doctor?

The distribution of the pain will depend upon the condition which is causing the pain Thus it may be local in origin or a referred pain In making a differential diagnosis the best plan is to start by considering the possible causes of pain in the hand and fingers and then work up the arm

First any neurological condition or nerve lesion is excluded by absence of wasting of intrinsics or anaesthesia In many of these cases there is however a complaint of numbness or paraesthesia of the fingers

The limb must of course be examined for any signs of inflammation new growth or deformity Osteo arthritic changes in the interphalangeal joints of the fingers would be

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obvious though these may not be the cause of the pain A trigger finger is obvious in the later stages but can easily be missed in the earlier stage before it actually locks Pain localized to one finger or thumb would call for palpation of the flexor sheath over the metacarpal head and on moving the finger the tender thickening of the tendon would be felt

Small ganglia are prone to occur in the transverse meta carpal ligament and could cause confusion Such a ganglion however is superficial to the tendon does not move with it and feels like a small pea under the skin

The subcutaneous palmar thickening due to Dupuytren s contracture usually with some fixed flexion of fourth or fifth fingers is obvious

The Thumb

Complaint of pain on use of the thumb is most commonly due either to De Quervain s syndrome or osteo arthritis of the trapezio metacarpal joint De Quervain s syndrome is a stenosing teno synovitis affecting the sheaths of the extensor brevis and abductor pollicis longus There is an obvious thickening of the sheath which is tender over the styloid of the radius Like teno synovitis in other parts the origin would appear to be largely mechanical There is usually a history of over use of the thumb at some period and as a result the greasing mechanism of the sheath has seized up

In osteo arthritis of the trapezio metacarpal joint there is some degree of swelling about the joint which is clearly visible Movements of the metacarpal on the trapezium cause pain and crepitus can often be felt Occasionally there is some fixed adduction of the metacarpal

Having excluded any local condition in the fingers the question of referred pain has to be considered

A tennis elbow can refer pain to the middle and ring fingers Compression of the median nerve in the carpal tunnel results in pain predominantly in the index finger usually worse in the night or early morning The cervical spine can result in referred pain to any or all of the fingers Thus the differentiation from the latter is not always clear cut

The Wrist

There are a large number of conditions that can cause pain about the wrist Ganglia are common and must be looked for A teno synovitis affecting the radial extensors with swelling local tenderness and often crepitus may follow some repetative action such as hedge clipping

A tuberculous teno synovitis of the flexor sheath com pound palmar ganglion does occur from time to time es pecially in those who work with cattle

The range of movement of the wrist must be examined for osteo arthritis may follow an old fracture or other causes Examination of the wrist movement needs to be done with care for cases are seen from time to time with a normal wrist joint radiographically but slight restriction of movement clinically There is usually a history of injury many months or years before Thus the pathology is the usual one avoidance of full movement because of pain with resulting formation of minor adhesions

The Elbow

Deformity resulting from a fracture in childhood is not uncommon and must be looked for

Limited range of movement would suggest osteo arth

ritic changes which could result from a past poly arthritis in which case usually bilateral osteochondritis dissecans or past trauma

Localized tenderness must be sought for In a tennis elbow this is in the extensor origin over the lateral epicon dyle or head of radius There may occasionally be spasm limiting the last few degrees of extension

There is a type of tennis elbow far less common with localized tenderness in the flexor origin from the medial condyle

Pain About the Shoulder

Pain in the shoulder may originate in the shoulder or be referred from the cervical spine Referred pain from the shoulder may simulate that from the cervical spine for both can give the following distribution of pain

Region of shoulder only with possibly some radiation to base of neck Over the shoulder and down the arm to the elbow wrist or fingers In both there may be complaint of numbness in the fingers or pins and needles though this is rare in the case of the shoulder

Therefore in deciding which part is at fault it is better to examine the shoulder first because the physical signs are more definite The signs however are not obvious and can easily be missed on a simple routine examination A few degrees of limitation of movement slow imperfect or jerky active abduction tenderness over the head of the humerus anteriorly are all indications that the greasing mechanism is imperfect from some cause or that the shoulder is on its way to becoming frozen The pain in this early stage can be as severe as later

In the classical type of frozen shoulder the limitation of abduction both active and passive is obvious the latter how

ever must be carried out very slowly and carefully to differentiate between limitation of movement by spasm or by actual adhesions To observe the finer degrees of limitation more care is needed Active abduction may appear to be full but ask the patient to raise both arms together forwards and straight up above the head Watch them both from the side of the patient and a definite lag may be observed on the affected side This may be due to adhesions or pain on movement The last few degrees of abduction must now be tested With the patient lying on his back arms above his head the two sides can be compared and slight limitation can be appreciated In the cases with full abduction but a slight lag on movement there will be tenderness over the front of the humerus Rotation must then be examined very carefully In some the only sign is a slight limitation of internal rotation

Thus clinically the salient feature on examination of these cases of pain referred from the shoulder is limitation of movement due in the majority of cases to adhesions

Now it is an interesting fact that a large proportion of patients suffering from a frozen shoulder will complain simply of neuritis down the arm and are quite unaware that there is any limitation of shoulder movement If the patient had been in the habit of putting the shoulder through full range of movement she would have noticed the limitation Thus again lack of full range of movement would appear to be an important factor in causing these painful conditions about the shoulder a subject that will be more fully discussed in chapter three

Cervical Spine

Having thus worked up the arm eliminating local causes

imperfect posture and the lower cervical spine flexed Secondly that extension of the cervical spine is not an occupation habitually practised if at all

Now if we consider people s habits and the lives they lead we can learn quite a lot more about the cervical spine In this civilized life as soon as we start reading writing and arithmetic we start poking our heads forwards to do those things and have to keep our heads in one position while we do them (Fig 3)



Fig 3 Posture writing

The posture is the same in so many occupations In driving a car the head must not only be fixed to keep the eyes on the road but tensed against the motion of the

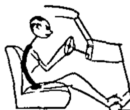


Fig 4 Posture driving

vehicle (Fig 4) Thus we spend most of the day with our heads poked forward busy doing things When sitting we seldom relax the cervical spine and on the rare occasions

when we do carefully adjust a cushion to keep it flexed



Fig 5 Flexed cervical spine relaxed

(Fig 5) Even in bed there are pillows and bolsters to maintain the flexion of the neck (Fig 6)



Fig 6 Flexed cervical spine resting

Now if we compare this stiff necked patient with any animal the difference in habits is profound All animals can relax and domestic animals are pastmasters at it What could be more relaxed than a spaniel on a hearth rug In addition all animals stretch in fact they make quite a business of it whenever they wake up They stretch their limbs stretch their backs and necks and put them through full range of movement

There must be a reason for this stretching which surely is to maintain the greasing mechanism elasticity and general working order of the moving parts Although man has lost to a large extent this stretching reflex those who depend upon their limbs for a living preserve it A pianist

will perform a very thorough full range of movement of fingers before a concert and professional footballers will perform a thorough stretching of legs before a match This suggests that it must be beneficial

The suggested pathology therefore for this condition of the cervical spine is 'excessive wear and tear of the lower cervical bearings as a result of over use in a position of bad posture out of balance aggravated by bad maintenance The bad maintenance denotes lack of full range of move ment to maintain the natural greasing of those bearings and one might add lack of occasional relaxation

Does this theory fit in with the facts?

Age and Sex These troubles occur more commonly in middle age and over therefore at a time when one would expect to see these signs of wear and tear

Women are affected more frequently than men This should be expected Women s posture generally is not so good because they are always bending over children knit ting and the like Men perform varied occupations with more movement

Radiographs As age advances there is a steady increase in the incidence of so called osteo arthritic changes in the lower cervical spine These changes are not the result of any disease they are just evidence of wear and tear and this occurs exactly where one would expect it from the results of bad posture and maintenance

On these considerations there would appear to be ade quate cause for pain in those of middle life and over but it does not explain why symptoms should develop in younger patients The majority of these are women and a probable explanation is what might be termed puberty neck When the breasts develop a number of girls poke their heads forward to keep in line with the altered contour Being of

the self conscious type they are often rather tense and thus we have extra wear and tear from bad posture at a very early age

The other factor resulting in early symptoms is osteo chondritis and this will be enlarged upon in the next chapter

The next question to be decided is the cause of the pain The fact that a radiograph in the later stages demonstrates degeneration of discs is not proof that these are the cause of the pain There are also joints between the articular pro cesses of the laminae and full range of movement has not been maintained in these Thus the pain may come from either or both Then there is the question of pain radiating to a more distant part Is this a referred pain is it due to root irritation or root pressure? The absence of neuro logical signs makes root pressure unlikely Pain radiating down the arm can originate in the shoulder or cervical spine That from the shoulder must be referred therefore it is probable that the pain from the cervical spine is similar

The pain felt between the scapulae is often labelled fibro sitis thus suggesting an origin in the muscles The lower cervical and upper dorsal muscles are always working over time fixing the head in a position off balance and are never put through full range of movement In like fashion the muscles of the shoulder girdles lead a sad unnatural life always used to fix the scapulae and never put through full range of movement Thus there are sufficient reasons why pain might originate in these muscles from time to time The probability however is that in the majority of cases the pain is referred from the lower cervical spine because treatment directed to obtaining full range of movement of that part will relieve the pain

Fibrositis is thus a misleading term for the pain is usually

referred and if any does arise in the muscles it is not inflammatory not toxic and certainly not rheumatic!

Having considered these possible causes of pain in the upper extremity and neck what is the answer to the question

Is it rheumatism doctor?

Well quite a number of conditions that could cause the pain have been mentioned and some less common causes have not been included

None of these conditions however answer to the name of rheumatism

TREATMENT

Treatment is outlined only for those conditions not dealt with in text books That for the shoulder joint follows in Chapter III

Lower Cervical Spine

In prescribing any form of treatment it is necessary to have a clear picture of the condition to be treated and also how the treatment is expected to benefit it

The condition to be treated is a cervical spine that has spent all its working time in a somewhat flexed position its resting time still flexed and has not been through full range of movement for years

The object of treatment is to restore full range of movement and the habit of maintaining it Thus we have got to restore the natural habit of stretching which all animals possess but man has lost Do any of the current forms of treatment achieve these results? Heat and massage are purely palliative pain relievers Traction may assist in loosening up stiff joints but does not achieve full range of movement

Manipulation can achieve full range of movement and may be useful in some cases The dramatic results of manipulation are not due to something being put back into place as certain manipulators claim but to the restoration of full range of movement Manipulation as a routine treatment has two disadvantages First we are trying to obtain full range of movement of joints that have not moved for years in one session Secondly in this form of treatment the patient is purely a passive recipient and is not educated or encouraged to obtain full range of movement for himself

The principles of treatment for these cases is therefore as follows Full range of movement is obtained slowly by a system of graduated relaxed extension This is combined with active exercises educating the patient in the habit of stretching

The routine is as follows After preliminary heat and massage to induce a state of relaxation (note this is merely a trimming and not the essential of treatment at all) the patient lies flat on her back on a couch with no pillow The head must be in the neutral position and not tilted back and lying thus though the cervical spine is extended but little it is extended more than it has been for years (Fig 7)



FIG 7 Lying flat the cervical spine is extended more than it has been for years

In a few cases with very flexed spines this is too much extension at first and small pillow may be inserted under the head

The shoulder girdles are then put through complete full

range of movement This not only ensures that the patient really is relaxed but also puts through full range of movement muscles that normally are merely used as fixers For the right side the masseuse holds the arm in her right hand and scapula in her left and for the left side vice versa

After five minutes relaxation the patient does a few active extensions arching her back until lying on back of head and buttocks (Fig 8) These must be done slowly and de-



Fig 8 Active extension of cervical spine

liberately after the manner of animals stretching A helping hand can assist to a fuller range of extension

The neck is then put through full passive range of movement followed by another active extension

At the next treatment the same routine is followed but the relaxed extension is carried out with a pillow under the shoulders in order to obtain an increased extension of the cervical spine (Fig 9) The head must be watched for if tilted back the cervical spine is not extended (Fig 9a)

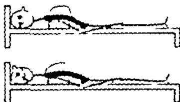


Fig 9 Relaxed extension of cervical spine

Fig 9a If the head is tilted back the spine is not extended

Therefore tell the patient to keep her chin down as much as possible

The treatment is planned in this way in order that the patient may develop the habit of helping herself She must be taught when she gets into bed to lie flat on her back with no pillow at all for five minutes Thus the cervical spine is relaxed and extended for a short period after the fatigues of the day She then does one active extension and stretch lying on back of head and buttocks after which she can go to sleep in any position she chooses Ideally the same routine should be carried out before rising in the morning Many will claim however that they have not time for this Those who wake up late have however time to do one stretch before rising lying on back of head and buttocks and they must do this During the day she must do a full extension standing up and stretching head and shoulders right back after the washing up or any occupation with head poked forward (Fig 10)



FIG 10 Active extension To be done after doing the washing up or knitting

Those who knit would do well to stop every twenty minutes or so relax for a minute and then stretch

Now my father who was in general practice for many years used often to say There are two things patients want the first is a good name for the condition from which they are suffering and the second is lots of treatment

Thus on his standards this treatment is deficient First we lack a good name and this is a serious difficulty It s no use just telling a patient that she is suffering from a stiff neck because she has never moved it Postural disc degeneration is possibly a better name and partly true but not really exciting from the patient s point of view Secondly instead of letting the patient be the passive recipient of lots of treatment (which they like) we are trying to educate the patient to help herself to keep fit This medically is a far higher ideal but means much harder work for the doctor He must possess enthusiasm be capable of imparting it to the patient and also he must have patience and tact and take the trouble to explain to the patient why her neck has got stiff from continual use in the one position He must then point out how frequently and efficiently the household dog or cat stretches ask the patient when she last stretched and in most cases patients will begin to understand

Tennis Elbow

The treatment of this troublesome condition must be based on an idea of what we are trying to treat The suggested pathology is a tender spot in the extensor origin resulting from the fact that those muscles have been over used in one position and have not been put through full range of movement The object of treatment is to put those muscles through full range of movement Therefore the tender spot is localized and about 4 cc of novacaine injected with the object of relieving spasm and making the

extensor origin less tender in order that a powerful thumb can get right into it and loosen it up The extensor origin is loosened up with the muscle in the position of full relaxation that is elbow flexed and also in the position of full stretch that is elbow extended wrist pronated and flexed After treatment is important Patients must practise the full stretch themselves that is elbow fully extended and hand in position of illicit tip They must continue after treatment namely deep friction in all positions of flexion and extension and full stretch until pain free

Osteo arthritis of the trapezio metacarpal joint

This joint is chosen as an example to illustrate some of the main features of the pathology and also the logical treatment of osteo arthritis

At operation the real state of such a joint is revealed The articular cartilage has been worn away over most of the saddle shaped articular surface of the trapezium and the corresponding surface of the first metacarpal and the exposed bone is eburnated and often worn into grooves Thus we have in actual fact a joint with the bearings worn out

We are always using our thumbs so this joint has much movement and not seldom is subjected to strain lifting heavy objects with the hands In addition it is frequently subjected to minor trauma and frequently to more serious trauma tending to subluxate the metacarpal on the trapezium In a large number of the cases therefore wear and tear and trauma would appear to be sufficient explanation for the development of the condition This explanation is not adequate for all cases In a number the condition is bilateral and in others the opposite side becomes affected after a number of years This bilateral tendency could be

explained in some by an anatomical abnormality namely rather lax joints tending to a subluxation of the metacarpal on the trapezium which would result in excessive wear and tear Alternatively the patient may have had at some time a mild polyarthritis toxic anaphylactic or the like with resulting slight deterioration of articular cartilage These joints having the greatest wear and tear become worn out first No form of treatment yet devised can make articular cartilage grow again Therefore all forms of injection physiotherapy or any form of ray can only act as a palliative As such they may have some temporary use in that they diminish pain and enable a worn out joint to carry on for a little longer

The only real solution to the problem must be radical and the possibilities are an arthrodesis or an arthroplasty An arthrodesis is not ideal in this particular joint first because mobility is more important than stability and secondly because prolonged splintage and therefore lengthy after treatment is necessary to produce a fixed joint

Arthroplasty as carried out by excision of the trapezium has the advantage of retaining mobility and after treatment is short in fact patients must start using the thumb at once Cases have now been followed up for ten years following this operation and the results have remained extremely satisfactory

REFERENCE

Gervis W H *Excision of Trapezium for Osteo arthritis of Trapezio Metacarpal Joint* (Journal of Bone and Joint Surgery November 1949)

CHAPTER 2

BACKACHE

There is a disease allied to the arthritis gout and scurvy which is very common and is called the rheumatism If the rheumatism fixes itself in the loins it is called a Lumbago if in the hip the sciatica or hip gout It is cured in the same manner though with greater difficulty

Commentaries upon Boerhaave s aphorisms by Baron v Swieten
1776—Vol XVIII Page 1 & 76

This chapter is concerned with the ordinary or " common or garden type of backache

On examination of a patient complaining of backache it is first necessary to exclude any definite text book disease In a recent series of five hundred cases of backache there were only twenty seven within such a category This is a very small proportion and they were as follows

Osteoporosis	9
Spondylolisthesis	4
Recent fractures	3
Old fracture	1
Spina bifida	3
Old standing scoliosis	1
Hemivertebrae	1
Tuberculosis	1
Ankylosing spondylitis	1
Paget s disease	1
Secondary carcinoma	1
Multiple myelomatosis	1
Total	27

Now the present nomenclature of what might be termed common or garden backache is very unsatisfactory be cause it is not founded on a sound aetiological basis This will be apparent if the current names are listed on such a basis

1 *Rheumatic Group*

Rheumatism
Lumbago
Fibrositis

These names carry us no further in our understanding of the patient s backache

2 *The Strain Group*

Lumbar strain
Sacro iliac strain

What does strain mean?

3 *The Disc Complex*

A prolapsed disc can and does occur but cases are now sent up labelled

Disc lesion
or just a a disc

These terms would appear to be examples of using a name to avoid the trouble of thinking

4 *The Something Out of Place Group*

Slipped disc
Sacro iliac subluxation

The idea of something out of place has been popularized by the manipulators What is not explained is why some thing should go out of place how manipulation gets it back and why it stays there and lastly why if treated by rest the symptoms should clear up just the same (Does the

little something out of place get bored with rest so creeps home to its proper place)

5 *Arthritis*

Osteo arthritis is a terrible word creating fear and apprehension in the minds of patients if they happen to see the X ray report

Osteo arthritis however is not a disease but X ray evidence of wear and tear The matter of course is not quite as simple as that because there are a number of conditions mechanical and otherwise which can accelerate these changes

The way to learn the aetiology of a condition is by the study of clinical material The cases in the series of five hundred will first be discussed rather generally and then in more detail

Localization of Pain

In the majority pain was felt in the region of the posterior iliac crest or buttock A good number lower back Sciatic pain common but much less frequent

Onset of Symptoms

The pain may just come on and there is often a history that it is getting worse A large number will give a history of an injury but if the story is gone into more fully the injury claimed is very seldom a real injury It is usually a normal action such as cranking a car or lifting a crate and one which the patient has performed many times though possibly this time with slightly more vigour Sometimes the injury is a twist of the back as the result of slipping but even then not a serious twist

Clinical Examination

The most noticeable feature of an ordinary examination

is the absence of any definite physical signs Straight leg raising may be limited in some

There is however one constant physical sign namely limited movement of the spine This may not be obvious because many do not expect a middle aged person to be able to touch his toes or extend the spine very far This *can be made more clear by describing a typical case*

Housewife aged forty with pain lower back to right posterior iliac crest Noticed for a year but getting worse She walks badly with no grace or poise stands rather round shouldered but has a good lumbar lordosis Straight leg raising and hip movements full

She can flex her spine until her finger tips are ten inches from the floor Extension of the spine is very limited Now if after making her extend her spine as fully as possible we then ask her when she last performed that movement of bending the back backwards she will be very voluble and hold forth in no uncertain terms about the amount she moves her back all day long in her housework If then approached with tact and patience and if it is carefully explained to her that the movement in question is one of extension or as she would term it bending backwards she will then admit that she never performs that particular movement and will probably add that she has not done so since she left school Lying on her back the movement of active extension of the spine is then assisted by the examiner who presses up the lumbar region with his hands She is then asked to stand and extend her spine again as fully as possible and an increased range of movement will be obtained She is then asked to bend down and touch her toes again and to her surprise she will find that she can bend down much more easily and nearly reach her toes Thus this case illustrates that extension was limited because with

a little help an increased range was obtained It does not illustrate the full degree of limitation which can only be appreciated by seeing the patient at the end of a course of treatment when she would have much more movement

Another observation and one that has been confirmed in a very large number of cases is also demonstrated namely that the range of flexion of the spine is increased after a powerful extension of the spine

X ray Changes

These are best considered in a table In order to weave a pattern in these cases of backache they are placed in age groups over variable periods of years Therefore to make the numbers in each age group comparable a per annum figure is also added

TABLE

Age Group	*Total*	*Per Annum*	*Male*	*Female*	*Active Osteo chondritis*	*Osteo phytes*
8 18	56	5 6	32	24	50%	—
					Results of Osteo chondritis	
19 35	126	7 4	52	74	28 5%	5%
36-45	105	10 5	41	64	14%	17 5%
46 60	148	9 3	74	74	8 5%	36%
Over 60	65	2 2	26	39	7%	52%

Now this table appears to demonstrate that in the 8 18 age group the predominant trouble in the back is osteo chondritis

In the 19 35 age group the results of osteochondritis are frequent The table however under emphasises this for the figure 28 per cent is that of proved cases only There are

another 25 per cent classified as probably the result of osteochondritis But of this more hereafter

In the group we find 5 per cent of cases with osteophytes There was one aged 30 the rest 33 to 35

36 45 group we have the maximum annual incidence preponderance of females marked increase in the number with osteophytes and fewer cases showing the results of osteochondritis

Over the next two groups there is a steady increase in the incidence of cases with osteophytes

This chart would appear to indicate a pretty definite pat tern of the behaviour of backs

In the 8 18 group of active growth those backs with that upset of growth known as osteochondritis are liable to give rise to symptoms

In the next group 19 35 in what should be lusty young adults those backs which are imperfect as a result of an osteochondritis during the period of growth are liable to produce symptoms

Then from the age of thirty onwards there is a relentless and steady increase in the incidence of osteophytes thus evidence of wear and tear reaching over 50 per cent in the over sixty group

Therefore considering this problem as it affects the last three groups it would appear to resolve into the question are all the troubles that flesh is heir to or rather the majority of them that affect their backs really just the result of wear and tear some folks wearing out more quickly than others Are all the patients really correct in their surmise that we are doomed to these changes which they euphemistically call rheumatism Or is there an alternative explanation Surely the answer to this problem is that although we are subject to wear and tear and some certainly seem to wear

out more quickly than others we in this present civilization are doing everything possible to accelerate that wear and tear and absolutely nothing to maintain the joints of our spine in decent working order

Thus the suggested hypothesis for these cases of back ache is similar to that discussed in relation to the cervical spine namely we spend our lives wearing our bearings in one position namely that of slight flexion of the spine and never stretch and put our spines through full range of move ment to maintain the normal greasing of the joints Look how all animals stretch whenever they wake up and dog that friend of man does a very thorough hyperextension of spine

There are four considerations which support this theory

1 The maximum incidence of backache is in the two groups 36 45 and 40 60 that is when folks are beginning to let themselves get stiff but still have to do a job of work

2 The frequent incidence of backache dating from the birth of the last child

Now if we consider a mother carrying a child although many manage to hide it in a remarkable manner and re main astoundingly agile right up to term there are quite a number who find the burden irksome can t sit in comfort and become very stiff in their movements They certainly do not and probably cannot extend their spines owing to the gravid uterus Having had the baby a woman s life is often very hard work If she feeds it she is spending nearly two hours a day sitting in an extremely bad flexed position The rest of the day she is probably bent over a wash tub washing nappies

Now if there is any truth in this theory of wearing the bearings of the back in one position and never stretching to maintain the greasing a number of these mothers are

doing precisely that for a period of a full eighteen months at least so one might expect trouble and it occurs

Twenty six per cent of the women in the 19 36 age group dated their symptoms from the birth of a child

Now whereas most of the back troubles at this early age are due to the results of a past osteochondritis these patients spines had not suffered in that way This suggests that the early onset of symptoms resulted from these effects of posture etc

In the next group 36 45 28 per cent of the women dated their symptoms from the birth of a child and there were a few more in the next group

3 Clinical Findings

The fact that the only constant physical sign is some limitation of movement suggests that this limitation is of some significance

The observation that the range of flexion of the spine is increased after an extension which must be as full as possible does suggest that the bearings of the back behave like any other bearings and that a little movement will improve the greasing

The results of treatment demonstrate that a greatly increased range of movement can be obtained and that the majority of those who really maintain this increase are vastly improved

4 The incidence of backache would appear to have increased during the last forty years and that increase coincides with a change in people s habits There are now more buses more motor cars and nobody ever walks Forty years ago quite a number of people walked and further a number went on horseback Going for a real walk the spine must be relaxed and in decent posture (you won t get there if it isn t) The same applies to riding a horse

Now nobody ever walks they either slouch around look ing at shops or dash to catch a train

This is a flexed and sedentary civilization We travel about in some form of mechanical transport slumped in a bad position as regards the back In motor cars the seats are low we sit with the lumbar spine flexed and thus pro ceed to bump the anterior inferior lumbar bearings on the not too smooth highway

The proportion of workers who perform actual physical labour is getting smaller and smaller Thus few use their bodies and muscles but on the contrary just sit about slumped in chairs

Having discussed the pathology of backache in very broad and general terms we must consider it in more detail

Osteochondritis of the Spine

An extremely good description of this condition was given by Butler (Ref) He states that it can affect any part of the spine and continues The mechanism of the process appears to be a failure of the cartilage on the ends of the growing vertebral bodies to act efficiently as part of the confining walls of the nucleus of the intervertebral disc The results of the process can be seen in radiographs

1 Separation of a segment of the apophyseal ring by a sub marginal protrusion

2 With larger protrusions anteriorly the vertebral body may become bottle shaped and later with cessation of growth the bodies may become wedge shaped with result ing kyphosis

3 If more central the protrusion will result in a Schmorl s

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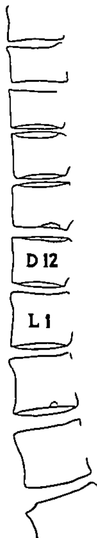
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Most of the cases of prolapsed disc at this age show evidence of past osteochondritis therefore it would appear probable that the disc prolapses as a result of the defects left by the osteochondritis



Now the typical feature of these post osteochondritis cases is the flat back with absent lordosis In over half of these there is X ray evidence of a past osteochondritis (Fig 14) Other cases have similar symptoms and physical signs A radiograph shows the typical straight spine in the lateral view but no other changes

Mild cases of osteochondritis can clear up and leave no radiographic changes and some have been followed up where all that remains is a diminished lumbar lordosis Thus it seems probable that most of these straight spines are the result of an osteochondritis

Though the flat back is typical of this condition it is not imperative A number of backs are seen with normal curves but a radiograph shows a Schmorl s node or the like

Consequences of Osteochondritis

In a severe osteochondritis there has been protrusion of the disc into the spongiosa of the vertebral body It is possible to see in an X ray film for there is scl

Fig 14 Radiograph of spine woman aged with typical straight back type 1 S straight spine in lateral view There is dence of past osteochondritis Schmorl s nodes inferior surfaces slight L.2 and slight superior surface

Results of Osteochondritis

The typical results of an osteochondritis present in the 19 35 age group The history is the usual one of pain lower back often with that story of an alleged injury which was no real injury A number have sciatic pain

Clinically in order of severity we may have

(*a*) An absent lordosis

(*b*) Flat back type 1

That is to sav a completely straight spine in the lateral view with no dorsal kyphosis or lumbar lordosis (Fig 13b)

(*c*) Flat back type 2

In this type there is one rounded kyphosis of the whole

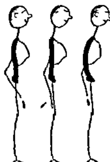


FIG 13 (*a*) Normal posture (*b*) Straight back 1
(*c*) Straight back 2

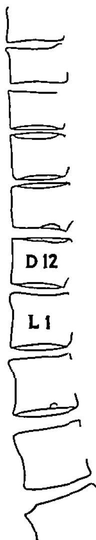
spine dorsal to lumbar (Fig 13c) This type is less common Movements of the spine are usually limited straight leg raising often limited

There is a reversed curve in the kneeling position if the symptoms are at all severe

In a few cases the sciatic scoliosis has persisted

Quite a number of the cases present with sciatic pain and the typical signs and symptoms of a prolapsed disc In fact they are suffering from a prolapsed disc

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FIG 14 Radiograph of spine woman aged 20 with typical straight back type 1 Showing straight spine in lateral view There is evidence of past osteochondritis namely Schmorl s nodes inferior surfaces D 11 slight L 2 and slight superior surface D 12

about the prolapse in fact a Schmorl s node (Fig 14) If the disc has prolapsed into the spongiosa part of the elasticity of that disc must be lost with the result that the spine is less elastic than normal

Only a considerable prolapse can show in a radiograph It is thus probable that there are in addition minor prolapses up and down the spine which do not show radiographically thus making a considerable part of the lumbar spine less elastic than normal The clinical findings are suggestive of this It is also probable that in those straight spines with no definite Schmorl s nodes showing there are in fact imperceptible prolapses into the spongeosa

Groups 36 45, 46 60, and over 60

Considering the complaints in these older age groups in more detail

Sciatic Pain

A considerable number of patients presented with sciatic pain or pain down one or both legs

A small proportion of these had spasm limiting spinal movements a diminished lumbar lordosis some a sciatic scoliosis or the ankle jerk absent in a few straight leg raising limited Thus they had the signs and symptoms of a prolapsed disc In some the onset had been gradual in others acute low back pain had followed what they called an injury and had been followed by sciatic pain On going into further details of the injury it was of the usual type in all these cases not a real injury just a bit of hard work or trivial twist The age was most commonly forty to fifty

Thus the popular idea of something slipping out of place as a result of trauma is not founded on fact

Is not the more probable explanation that by this age

degenerative changes have occurred as a result of wear and tear and lack of proper maintenance and therefore a pro lapse is about to occur Obviously the prolapse would be more likely to occur when the patient was lifting a crate of apples rather than when he was relaxing in the local

Other Cases of Sciatic Pain

The remainder of these patients with sciatic pain or pain in a thigh or thighs had no sign of a prolapsed disc Hip movements were full Note the hips must always be exam ined because an osteo arthritic hip can give a referred pain sciatic in distribution Thus we are left with the probable explanation that the pain down the leg is a referred pain

Cases With an Acute Onset

A sudden acute onset of low back pain is not infrequent and often follows an alleged injury The injury is the usual type more like work than an injury or an odd twist

In some the symptoms are severe and the patients are confined to bed Movements of the spine are extremely limited and straight leg raising very limited The signs are suggestive of the onset of a prolapsed disc and this is prob ably a correct diagnosis in a proportion of the cases

In those with less severe symptoms such a diagnosis is neither correct or necessary for there is a better explanation

The limited movement of the spine at this period of life has already been discussed Is it therefore not more prob able that as a result of some odd movement the spine has gone beyond its habitual range resulting in pain and Nature s over zealous reaction which is spasm?

Chronic Low Back Pain

The length of history varies from many years to several

months The absence of physical signs has been discussed Clinically there is no difference between those showing marked radiographic changes with osteophytes at disc margins and those with no changes Many different occupations were represented

In many of those who dated their symptoms from childhood definite evidence of past osteochondritis was found

The possibility of osteoporosis must not be forgotten in any patient over fifty or sixty especially women

TREATMENT

The outline of treatment will be considered under the following headings

1 Active osteochondritis
2 The results of osteochondritis together with the stiff back of the other age groups
3 Acute low back pain
4 Prolapsed disc

1 Active Osteochondritis of Spine

Treatment must perforce remain empirical until we have more knowledge of this disease As however its results can be troublesome throughout life anything that can be done to mitigate these is important Early diagnosis is important and this condition must be borne in mind when examining any child with vague pains in back poor posture or pain in a leg

Mild Cases Children with signs and symptoms suggestive of this condition but no definite changes showing in a radiograph are given a course of extension exercises to the spine The habit of doing a thorough stretch and extension

of the spine on waking and at odd times is developed They are also taught to walk properly

Moderate Cases If in addition to the above signs there are positive changes showing in a radiograph but not severe in nature then the same routine of treatment is carried out but in addition all strain especially in flexion must be avoided Therefore P T gymn rugger and the like are forbidden The child however wants some exercise to keep healthy so may walk and run and swimming is encouraged In some of the more severe cases in this category extra rest with a pillow in the lumbar region is advisable

Severe Cases Those with severe symptoms or severe changes in a radiograph are put in a plaster of Paris jacket with a view to protecting the vertebral bodies from further encroachment by the discs and of giving Nature a chance to effect some repair The jacket must be put on in extension the technique is described later While wearing the jacket the child carries out extension exercises After its removal in three or four months he continues to attend for extension exercises

2 The Results of Osteochondritis and the Stiff Back of Civilization

The treatment for these two conditions is similar In the 19 35 age group the spines are less elastic than normal as a result of past osteochondritis In the older age groups age thirty six onwards the spine is becoming stiff from working in one position for years plus lack of full range of movement to maintain elasticity In a number of the older patients there will be X ray changes in the nature of osteophytes It must be repeated that these are merely visible signs of wear and tear and not a disease and do not affect the nature of the

treatment In a number there may also be some referred pain down a leg

The aims of treatment are first to obtain full range of movement of the spine and secondly to develop the habit of stretching and maintaining that full movement in the patient Lastly the posture in various habitual occupations should be improved wherever possible

It is important that patients should understand what is the matter with them in order that they may co operate in the treatment

I therefore make the patients stand stretching head and shoulders backwards and hollowing back as much as it will go Ask them when they last performed that movement and they admit they had not done it since childhood I then ask them if they have ever watched a cat wake up and few people have not noticed how a cat and all animals do a wonderful and full stretch on waking I then point out that a cat which leads a tolerably idle life is always doing a stretch to keep its bearings greased whereas man who works much harder most of it in the slightly bent position is thus wearing one part of his bearings all the time yet never takes the trouble to stretch and thus grease his bear ings Patients usually understand this and will co operate Of course one gets a few that are awkward as the woman who said but I am not an animal or those patients who say oh but my back gets plenty of movement in my work

If a spine has not been fully extended for some years it s no good expecting full range of movement just for the asking Manipulation might appear to be the logical answer and in some cases will achieve dramatic temporary results but in old standing cases it is not possible to obtain full range without much force and therefore some reaction

A method was therefore devised to obtain full extension slowly by means of blocks The blocks are seven inches long two inches wide and varying height They have a transverse groove in the middle to accommodate the spinous process and are suitably padded The patient lies supine on a plinth arches her back and the height of the lumbar lordosis measured After some heat and massage to obtain relaxation of muscles she then lies on a block half an inch higher than the measured lordosis (Fig 15) After



Fig 15 Relaxed extension of lumbar region

ten minutes relaxation on the block she does a series of active extensions lying on back of head and buttocks (Fig 16) Active extension in this position has the advantage



Fig 16 Active extension of spine

that the spine is not weight bearing for the weight is taken on back of head and buttocks Extension exercises in the prone position are not used for in this position with extended neck and dorsal spine and extended hips the weight of head thorax pelvis and legs are all taken by the lumbar spine This may account for the fact that exercises performed in this fashion usually seem to increase the pain (Fig 17)

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When full extension has been obtained it is time to get a full flexion but the patient continues all the time with relaxed and active extension exercises Flexion must first be obtained in a gravity free position therefore on all fours first hollowing then arching the back (Fig 19) After this

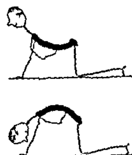


Fig 19 Gravity free extension and flexion of spine

partial gravity free in this fashion The patient stands a yard from a plinth or low table hands on the table rises on tip toe then keeping elbows straight depress head stretch and arch up back Then still keeping arms straight raise up trunk and head bring pelvis forward and stretch back head and shoulders with weight on hands (Fig 20)



Fig 20 Exercise for real flexion plus stretch and extension plus stretch of spine

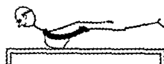


FIG 17 How not to do an active extension Exercises in this position usually make the pain worse It is a strained position and the spine is weight bearing

The second exercise is carried out standing up and is simply a full extension stretching head and shoulders right back (Fig 18) It should be performed sometimes with arms



FIG 18 Active extension standing

above head and stretched back sometimes with arms to the side all the exercises are modelled on the natural stretching of animals and must be performed as a stretch Patients are taught to do this stretch whenever they have been flexed for a while such as doing the washing up or driving a car After a few treatments it will be found that the lumbar lordosis has increased and a higher block can be used

This treatment with graduated blocks can of course be used to increase the range of extension of any part of the spine

could be greatly helped if kitchen sinks shelves and cup boards were all at such a reasonable height that she did not have to bend all the time

3 Acute Low Back Pain

As was indicated under the pathology of this condition the more severe symptoms may result from the prolapse of an intervertebral disc whereas the less severe symptoms are more indicative of an odd movement going beyond the habitual range in a stiffening spine

The latter type of case will be considered first They have acute pain though some of the more severe cases will be confined to bed the majority can get about with some dis comfort Movements of the spine are limited by pain and spasm and straight leg raising is generally limited

This is the type of case in which manipulators claim suc cessful cures of prolapsed discs (It has been noted how ever that it is unlikely that the disc prolapsed) Recovery can be expedited by manipulation if it restores full range of movement Therefore it must be carried out gently and slowly or otherwise Nature s protective spasm is merely aggravated The technique adopted is as follows

The patient lies on his back the operator places his fist under the lumbar region thus providing a mild relaxed extension As the spasm passes off the lumbar region can be passively extended by raising the fist The spine is then rested still extended on the fist The patient now does an active extension of spine lying on back of head and buttock and this time that movement is gently assisted by the hands of the operator under the lumbar spine After this the patient is usually more comfortable and straight leg raising increased The patient then stands and does a full stretch

When patients are discharged they must be given a printed reminder telling them to do this exercise every morn ing arch their backs in bed night and morning and do a stretch always after doing the washing up or any prolonged sitting It is not enough just to tell them to do these things they will forget

Posture

Quite a lot can be done to improve posture in many occupations

Car seats are all bad Have the seat as far forward as possible so that the knees are flexed and have a small cushion hanging from the back of the seat at just such a level that it will fit into and maintain the lumbar lordosis (Fig 21)

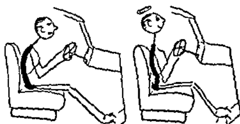


FIG 21 (*a*) Usual posture in a car (*b*) Better posture driving a car seat forward cushion in lumbar region to maintain lumbar lordosis

When travelling by train remember it may rain so always carry a raincoat and roll it up to form a cushion for the lumbar region When sitting in chairs it should be a good habit first to arrange a cushion to fit the lumbar region

In lifting weights and cranking cars the back should be hollowed and the work done by the thighs Women s work

A jacket does not immobilize the spine no jacket could as long as the patient is breathing If however a jacket is put on correctly that is with the spine in extension to restore the lumbar lordosis and if the jacket comes sufficiently low over the pubis and sufficiently high over the sternum to maintain that lordosis then the spine is held in the position of natural balance with normal curves instead of in the position of slight flexion with increased weight falling on the anterior part of the lower lumbar discs When the spine is in the position of correct balance Nature has an opportunity to effect some repairs In the more severe cases with much spasm it is not possible for the patient to extend his spine therefore not possible to put on a jacket maintaining a lumbar lordosis Such cases are first put to bed for a week with traction on the legs which will relieve the spasm

The technique of the application of the jacket is important The jacket must be comfortable or the patient cannot relax in it and one of the objects of a jacket is to get rid of Nature s protective spasm which unfortunately is pulling in the wrong direction Therefore it must fit well and there must be no creases in the padding

The patient in stockinette vest lies face downwards on the table head and shoulders propped up on two pillows to produce a lumbar lordosis An oblong of felt is cut to fit across the lumbar region with the stretch of the felt vertical then by pulling the sides of the felt it will become saddle shaped and fit the lordosis exactly Plaster slabs are now laid on this held in place with strips of cotton bandage The patient is then turned over and a special sling inserted under the plaster saddle which is then raised by means of a block and tackle to the fully extended position of the spine The front half of the jacket can then be made after which wooden blocks are placed each side of the sling

and extension of spine He then takes life quietly for a day or so sitting with a cushion to maintain his lumbar lordosis and doing a full stretch frequently He also attends for treatment to make certain

The severe cases are usually seen in their homes because they cannot get out of bed

Movements of the spine may be extremely limited and so may straight leg raising A reversed lumbar curve is often present in the kneeling position Now the pain will be considerably relieved in many of these patients by the gentle extension just described These patients must be treated in bed because they cannot stand properly out of bed They *are therefore treated with bed rest one to three weeks* that is until the spasm has passed off Rest alone is not enough and their recovery can be accelerated by relaxed plus active extension exercises Relaxed extension is simply carried out in the home by lying on a rolling pin suitably padded by a towel and placed transversely under the lumbar region They lie on this for ten minutes three times a day following it with an active extension lying on back of head and buttocks They can get up and go to the toilet without harm if they walk all the way there on tip toe which maintains the lumbar lordosis and prevents them walking doubled up

As soon as able to get up they continue treatment in the physiotherapy department

Any case not improving and exhibiting the sciatic pain and signs of a prolapsed disc should be treated as such

4 Prolapsed Disc

These cases are treated by means of a plaster of Paris jacket Now such a jacket can be quite useless unless we consider how it probably benefits the condition and therefore have an idea how it is to be put on

Life cannot be quite normal in a jacket and patients should be warned A V must be let into the back of trousers or it will not be possible to button them up It is not possible to put on shoes and socks and someone must do it for the patient To get out of bed roll out on to knees on floor then climb upright with hands on bed One can not sit on a low chair so sit on a fairly high one Put a cushion at the back against the plaster then it is possible to lean back extending the spine over the top of the plaster It is possible to drive a car but there are difficulties one has to use the mirror for reversing because it is not possible to twist round in my car I could not reach the hand brake

Patients sometimes get swelling of the leg or discom forture due to pressure of the jacket in the groin This can be relieved by an extra pad of felt under the pubic portion

Patients must do extension exercises in their jackets and continue to do them when it is removed after about three months Six months after removal of jacket they must start to work up to full range of movement at first by gravity free flexion as described If they do not do this they will get pain later due to limitation of movement Thus a corset is not only unnecessary in the after treatment but harmful

Most patients should eventually be fit to return to full normal work but it may be six to twelve months before they can do heavy work

COMMENTS AND CRITICISM OF SOME OF THE CURRENT METHODS OF TREATMENT

Rest

Rest is useful and essential in some cases for a period Treatment by means of rest alone is slow

Generally speaking patients are rested much too much

which can then be removed and the jacket completed in cluding that part under the sling (Fig 22)

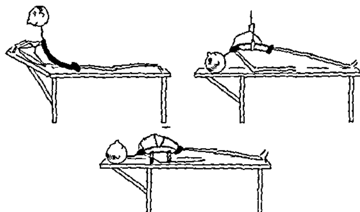


Fig 22 Application of plaster of Paris jacket (*a*) Hyperextension of spine in relaxed position resting on pillow Plaster saddle made (*b*) Patient supine extension of spine maintained by sling under plaster saddle Front and sides of jacket can then be made (*c*) Blocks inserted each side of sling under plaster saddle Sling removed and jacket can then be completed includ ing that part under the sling

One of the complications of a plaster jacket is abdominal distension which can be extremely uncomfortable It is therefore important to make certain that the bowels are not constipated before the application of the jacket and to get the patient walking at once as soon as the plaster has set

The patient will wake up at about 1 a m that night feeling cold because the plaster is still very wet and uncomfortable in the back This discomfort can be relieved by means of an electric hair dryer blowing warm air on to the jacket under the bedclothes plus an active stretch arching up to lie on back of head and buttocks Some patients want to spend the night sitting up in a chair and this must be discouraged for it does not relax the spine

Corsets

Corsets must have some efficacy as regards sex appeal judging by the pictorial advertisements we see everywhere They are also useful in supporting a woman s stockings Can they support the back and have they any therapeutic action in backache?

What is meant by this term support the back So many patients are sent up to hospital with a note that they need a corset to support the back that the matter must be con sidered Now if a corset were tight enough and strong enough it might theoretically transmit some of the weight direct from the chest to the iliac crests thus relieving the lumbar discs of part of their burden I have never seen a corset possessing such an action and doubt if a patient would be able to breathe and get about in one were it made

What is the action of the ordinary surgical corset? Is flexion meant to be limited? Actually most patients flex pretty well in their corsets though full flexion is made un comfortable and awkward Is this beneficial for the patient?

Most corsets limit extension and those with metal slats in the back limit it quite a lot What is the object of limiting extension? As so many of the troubles in the back are due to the fact that the patients had not extended their spines enough why give them a corset to stop that movement!

If the metal slats at the back of the corset were bent suffi ciently to fit right into the lumbar lordosis when sitting the corset might be able to perform one useful function namely to maintain the lumbar lordosis when driving a or sitting Such a corset might however look a when standing Anyway why carry a length of canvas round your middle when a properly placed in the car or chair can do the job far more efficiently

Patients who have worn corsets for years all

and their recovery could be expedited by movements prop erly carried out

Massage

Massage can be extremely useful in relieving pain and spasm It is not however a method of cure by itself but merely a useful adjunct which can assist in obtaining full range of movement.

Heat, Rays and Lamps Various

The feeling of warmth and comfort may help to induce some relaxation which can be utilized to obtain an in creased range of movement

Manipulation

Manipulation is very popular its popularity is founded on the fact that quite a number of patients are relieved of their pain by its aid

It is improbable that the patient's pain was relieved be cause something was put back in place even though the patient may believe it

From a study of these cases of backache it would appear far more probable that the pain was relieved because an increased range of movement was obtained in a spine be coming stiff

Manipulation is not the best method of obtaining full range of movement If carried out forcibly it may result in pain and reaction In this form of treatment the patient becomes just a passive recipient and does nothing to help herself Therefore the pain is apt to recur because she has not maintained full range of movement Thus it appears better to obtain full range of movement slowly and teach the patient to maintain it by stretching as all animals do

CHAPTER 3

THE TREATMENT OF MINOR INJURIES

It s the little things that try us

THE results of the treatment of minor injury are not en tirely satisfactory Recovery is apt to be slow sometimes very slow and complications may occur

There are four causes for this which need consideration

1 Nature s reaction to such an injury is excessive con sidering the minor nature of the injury

2 Certain regions of the body which patients regard as liable to suffer from rheumatism are apt to develop chronic pain after trivial injury

It will be shewn that these are parts which are seldom if ever put through full range of movement

3 In many cases the symptoms result from the aggrava tion of a pre existing condition although this con tion may have been symptomless before

4 The injury was not a minor injury but a major injury

The typical example of this is a mallet finger which is not a minor injury but must be treated seriously at once

Considering these reasons in detail —

1 Nature's Excessive Reaction

A simple sprain is a good example of this A sprain by definition is a partial rupture of a ligament and in the case

new one with the same phrase 'Oh I could not possibly get along without the corset If however they are ques tioned as regards the condition of the back the answer is always couched in such terms as Oh I still get the pain terrible

Surely it would be better to be without the corset and without the pain

To sum up a corset does not appear to perform any use ful function but does exert a harmful action in that it limits extension of the spine

REFERENCE

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prevent a strain that would complete the rupture of the ligament is a plaster of Paris cast In these days of pseudo science it tends to be assumed that if the X ray report reads 'no bone injury the case is one of a simple sprain This is far from the truth In a few cases it will be observed that there is tenderness and swelling over the internal and external lateral ligaments and there is some pain and spasm In such a case the talus was nearly dislocated and the rupture of one or more of the ligaments was more nearly if not actually complete It would not be possible to teach such a case to walk as described because Nature would not relax the protective spasm Such a case could be treated by rest but this is very slow and the spasm would tend to the formation of adhesions If such a case walks in a plaster of Paris cast the ligaments are protected so Nature relaxes the protective muscle spasm The act of weight bearing maintains the normal lubrification of joints and at the end of three weeks when the cast is removed there will be no stiffness so the patient can be taught to walk properly as described

This same problem of excessive reaction applies to many minor injuries Take for example a blow on the thigh causing bruising Flexion of the knee is painful with the result that movement is avoided and the gait becomes a limp The condition will remain painful until full range of movement is achieved If however active movements non weight bearing are practised from the first with the object of obtaining full range of movement resolution will be rapid and the pain will be relieved

In the case of the knee joint after a simple sprain patients avoid putting the quadriceps into full action If unchecked this may lead to a feeling of instability After such an injury the patient must practise quadriceps exercises at once Note

they will soon find that they can take less weight on hands then finally none They must walk all the time in the same fashion that is rising up on the toes of the carrying leg as the after coming leg comes forward and feet parallel Patients who will do this (and it is quite easy) will be free of pain very quickly the swelling will rapidly subside because normal circulation is being maintained and they will get a full recovery

Now the time honoured treatment of a sprained ankle is either rest or support In an age of leisure rest may have been a satisfactory form of treatment in a number of cases Its action surely is to give time for Nature s excessive reaction to settle down and then we hope the patient walks properly Its disadvantages are first that it is an unnecessary waste of time for the patient could have been getting about his business secondly there may still be some reaction when the patient starts to walk again for resolution is slow with rest with the result that he will still limp Thirdly if he rests too long he may develop stiffness and not seldom actual adhesions limiting inversion

Support

Now treatment by means of support is very popular but usually loosely applied owing to loose thinking An elastoplast or crepe bandage could not really support the ligament that is prevent a completion of the rupture should the foot go over It can however perform a very useful function which is to prevent excessive effusion Therefore such a bandage may be useful for a day or so while the patient is learning to walk but is merely an accessory and not the whole treatment or even a very important part of it

The only real form of support namely one that could

prevent a strain that would complete the rupture of the liga ment is a plaster of Paris cast In these days of pseudo science it tends to be assumed that if the X ray report reads no bone injury' the case is one of a simple sprain This is far from the truth In a few cases it will be observed that there is tenderness and swelling over the internal and ex ternal lateral ligaments and there is some pain and spasm In such a case the talus was nearly dislocated and the rup ture of one or more of the ligaments was more nearly if not actually complete It would not be possible to teach such a case to walk as described, because Nature would not relax the protective spasm Such a case could be treated by rest but this is very slow and the spasm would tend to the formation of adhesions If such a case walks in a plaster of Paris cast the ligaments are protected so Nature relaxes the protective muscle spasm The act of weight bearing main tains the normal lubrification of joints and at the end of three weeks when the cast is removed there will be no stiff ness so the patient can be taught to walk properly as described

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these must be real exercises sitting on a table and getting a full extension of the knee each time not just sitting and waving the leg like a leaf fluttering in a summer breeze

Stiffness and rigidity out of all proportion to the serious ness of the injury are a feature that occurs from time to time The typical example is a young woman having had a mild sprain of her wrist some weeks before and complaining of much pain Routine physical examination reveals nothing abnormal except a disinclination to move the wrist and fingers normally Ask her however to stand up and let the arms hang down and the typical features are manifest On the normal side the arm will hang down and the fingers will fall relaxed in the position of slight flexion On the affected side the wrist will be rigid and probably slightly flexed the fingers will be stiff and extended Thus a vicious circle is established a limb that is never relaxed must be painful and the patient is trying to counter the pain by rigidity Label ling these cases as psychological will not cure the pain or help the patient but a little education in relaxation and full range of movement will rapidly effect a cure

2 The Relationship Between Continued Pain After Minor Injury and Lack of Full Range of Movement Before the Injury

Pain is apt to become chronic in certain parts of the body after trivial injury (and the patients say that rheumatism has set in)

These regions are all parts of the spine including the neck shoulder girdles and the shoulders All have one feature in common namely that they are seldom if ever put through full range of movement

The relationship between this flexed and sedentary civilization and the troubles in the neck and spinal column have been discussed

The Shoulder Joint

Much has been written on the differential diagnosis of the various conditions traumatic or otherwise met with in the region of the shoulder but little on the simple facts of life as pertaining to the shoulder

The shoulder joint has greater range of movement than any other joint and during the exuberance of youth full use is made of this range After that it is gradually used less and less and one seldom sees a stately adult swing the arms right round A full abduction of the shoulder is an occupation seldom practised more seldom than is generally supposed for in such occupations as hanging clothes on the line or taking a book from a shelf full abduction is usually avoided A frozen shoulder that is a shoulder with some degrees of abduction limited by adhesions is a fairly common finding at out patient clinics A number of these patients will give a history of injury to the shoulder some months before A large number of them will be quite unaware that their shoulder movements are limited thus supporting the statement above that people seldom put their shoulders through full range of movement

Considered in this way it is not surprising that adhesions should tend to form after any trivial injury In middle life and after the shoulder is never put through full range of movement to maintain the greasing mechanism of all the bursae and tendon sheathes about it but on the contrary is continually held in the mid position while we do things with our arms

These considerations have a practical bearing on treat ment which can then be approached in a more realistic fashion Major trauma must first be excluded

Here is a shoulder in which the greasing mechanism was imperfect about the rotator cuff owing to lack of full range of movement therefore as a result of the injury it is tending to seize up (call it tenosynovitis or what you will) As a result the patient cannot abduct his shoulder properly therefore it is no use trying to make him If he does not abduct it adhesions will form and he will develop a frozen shoulder Therefore it is essential to maintain full range of movement This can be done if carried out in such a way that the rotator muscles are not in full action

1 The patient lies prone on a plinth with the affected arm hanging over the side This gives him ninety degrees forward elevation and he can gradually swing the arm to an increased range

2 When improving or from the first in less severe cases the patient lies on his back arms resting on his body elbows extended fingers of the two hands interlocked He then brings the arms up and over his head to the fully abducted position the good arm assisting the bad one

3 With further improvement or in very mild cases swing the arm right round This is not as easy as it sounds but must be done properly It is quite useless for the patient to move the arm slowly round with every muscle in strong contraction and usually failing to achieve full abduction

The arm must swing right round passing through the *position of* full abduction The muscles controlling the shoulder are relaxed and the arm is thrown round by mov ing the trunk An Indian club may assist in maintaining the momentum

Heat massage etc and loosening up the joint by a mas

seuse are all useful accessories in accelerating resolution The essential treatment however is to maintain full range of movement which can only be done by paying due respect to the process that is causing limitation

Frozen Shoulder

If there are adhesions preventing abduction these must be broken down by a manipulation under an anaesthetic An injection of novocain and hydrocortisone is then made into the sub deltoid bursa to prevent a reaction and the shoulder put through full range of movement again The patient must be instructed to perform a full abduction with the two hands locked (exercise 2) as he is coming round from the anaesthetic

Such a manipulation should not be necessary in mild cases with only slight limitation of abduction They will usually recover with the exercises as outlined especially the last carried out properly and physiotherapy designed to loosen up the joint

3 Symptoms Resulting From the Aggravation of a Pre-existing Condition

The possibility of the aggravation of a pre existing con dition must be borne in mind with any untoward symptoms after a trivial injury

A child between ten and seventeen complains of pain in lower back or down one leg after a fall A diminished lumbar lordosis restricted straight leg raising and possibly a sciatic scoliosis would raise the suspicion of an active osteochon dritis of spine which would be confirmed by radiograph The late results of osteochondritis are also prone to give trouble in this way and the matter can have medico legal

importance A young person aged eighteen to thirty five is lifting in the normal course of his work and gets a sudden pain in his back On examination lumbar lordosis absent reversed curve in the kneeling position straight leg raising probably slightly limited Radiograph shows absent lumbar lordosis and the presence of a Schmorl s node confirming past osteochondritis

Osteo Arthritis

This inappropriate name does not signify a disease but is used to indicate that a joint is part worn or becoming worn out either from simple wear and tear or more probably aided and abetted by one or more of the various factors that can accelerate wear and tear

Such a joint reacts adversely to injury and there is more pain and more effusion than a like injury would have pro duced in a normal joint This reaction is very commonly seen in knees with early osteo arthritic changes In some cases there may be a difficulty in diagnosing between this condition or the aggravation of another condition namely an old tear of a medial meniscus which had been symptom less for years In both there is likely to be tenderness on the medial side The diagnosis can be settled by a very simple therapeutic test The treatment for the osteo arthritic knee is faradism to the quadriceps and active exercises Get it moving restore activity and be sure that the exercises are properly carried out and full extension obtained Persistence of symptoms despite treatment with localization to the medial meniscus would suggest an old tear of a medial meniscus

The Osteo-Arthritic Knee With Limited Extension

This condition is not generally described but is a definite

entity of fairly frequent occurrence The patient is middle aged or over and more often a woman There is often a his tory of injury months before but this may have been trivial and forgotten The complaint is of pain in the knee

On examination there may sometimes be a slight effusion but the only definite physical sign is a slight limitation of extension varying from five to twenty degrees This can easily be missed if the examination is not thorough With the patient lying on a couch rest both heels on a book to ensure that they are level and it is then possible to compare the extension in the two knees A radiograph will exclude a loose body as being the cause of limitation and would show slight osteo arthritic changes only

The pathology of this condition is simple Here is a slightly worn knee joint which became slightly painful as a result of a trivial injury so full extension was avoided In cluded in the pathology one might add the disinclination of the human race generally to stretching and extending their limbs fully As a result minor adhesions form preventing full extension

Now in normal standing we lock the knee just hyper extended which allows the quadriceps to relax If a knee cannot hyperextend the quadriceps cannot relax and this may account for some of the pain

The results of treatment of these cases are very satis factory If the limitation of extension is only slight it is usually possible to obtain full range of movement by a manipulation without an anaesthetic The tibia is rotated on the femur in all positions of flexion and extension then the tibia is pulled forward on the femur and the knee gradu ally extended The patient is then told to stand and brace both knees back as hard as possible and then to walk She usually volunteers that she is much more comfortable After

importance A young person aged eighteen to thirty five is lifting in the normal course of his work and gets a sudden pain in his back On examination lumbar lordosis absent reversed curve in the kneeling position straight leg raising probably slightly limited Radiograph shows absent lumbar lordosis and the presence of a Schmorl s node confirming past osteochondritis

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CHAPTER 4

THE FOOT

London Bridge is falling down
(*Old Song*)

FALLEN arches dropped arches weak arches are terms frequently used and applied by the public to any trouble in the foot

In shop windows up and down the country are displayed various forms of support claiming to be able to support these tottering arches This chapter attempts to prove that the foot only behaves as an arch when it is already flat , and that a metatarsal arch is a case of wishful thinking

This subject will be considered in two main sections First pes plano valgus (flat foot or by any other name) and secondly pain in the forepart of the foot

Pes Plano Valgus

A very small number of cases are the result of disease either paralysis or a sub acute arthritis of the primary or secondary rheumatoid type In both the deformity may be extreme

In the majority of cases the deformity is really postural There are many theories on this condition but none of them quite satisfactory The following is founded on anatomy and observation of affected feet A special stool was used

treatment is important faradism to quadriceps and active extension exercises of the knee with the physiotherapist assisting and making sure that full extension is obtained

If the limitation is ten degrees or more it is better to manipulate the knee under an anaesthetic to obtain full extension apply a plaster cast to maintain it in which the patient walks for ten days then follow with physiotherapy as outlined

There is a point in the technique of applying these casts which adds greatly to the patient s comfort A rigid cast right up the thigh is a very uncomfortable thing to sit on Put elastoplast over foot and ankle stockinette up the leg and wool over bony points Apply two slabs to the medial side of the leg and another two to the lateral and a circular or two to keep them in place Then apply a wet cotton bandage firmly round the upper two thirds of the thigh Cover this with one turn of a circular and complete the rest By this means the back of the cast is not quite hard but equally efficient in maintaining extension



Fig 23 Pes plano valgus posterior view Showing usual valgus appearance of ankles and eversion of calcaneum In the mirror can be seen the typical footprint of the first stage of this condition namely heel and metatarsal heads only The lateral border is not weight bearing

with glass top and mirror underneath in order that all sides of the foot could be seen including the sole

An arch is a structure which is supported at each end of its span but not in the middle In normal standing the lateral border of the foot is weight bearing throughout its length Therefore the foot is not behaving as an arch so cannot collapse vertically downwards as an arch could collapse

The deformity in the first stage of a pes plano valgus is the result of a medial rotation of the talus which causes the foot to lean over towards the medial side The lateral border thus becomes no longer weight bearing but only the heel and metatarsal heads Thus we have the amusing paradox that in the first stage of a pes plano valgus the foot is behaving as an arch This position of the foot is unstable and like an arch it may collapse More weight is being thrown upon the first metatarsal segment which may result in gradual dorsiflexion of this segment and an increase of the deformity There are three causes for the medial rotation of the talus Two are postural medial rotation of legs and out toeing The third is medial torsion of the tibia The validity of this hypothesis is best examined clinically (Fig 23) This is a typical example of a first stage pes plano valgus The foot is leaning over to the medial side producing the usual valgus appearance of the ankles In the foot print seen in the mirror only the heel and metatarsal heads are weight bearing Such a foot print with the lateral border not weight bearing is usually illustrated as that of a pes cavus and can result from it In quite a number of cases of pes cavus however the lateral border is weight bearing and the foot print normal That this is not a case of pes cavus is shown by the eversion of the calcaneum When I first observed this foot print in this condition I was surprised but have now confirmed that it does occur in the

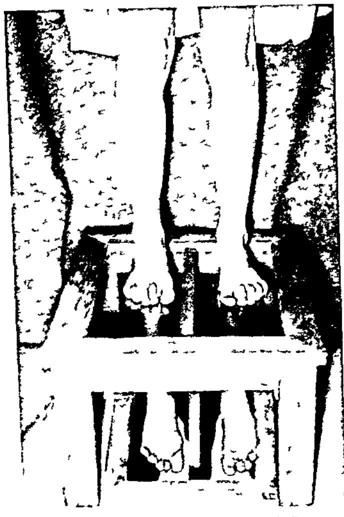


FIG 25 Correction of the deformity by correction of the medial rotation of legs Same case as FIG 24 She is now standing with patellae pointing in the same direction as the feet and as a result the pes plano valgus deformity is corrected

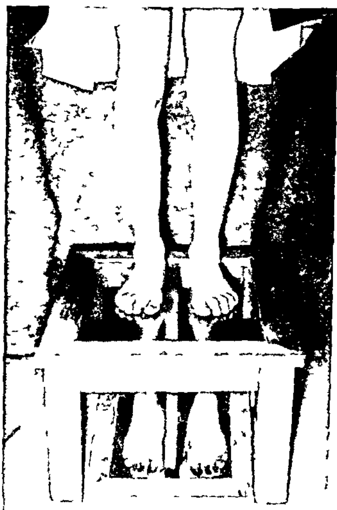


FIG 24 The same interior view Observe that the patellae and therefore the legs are rotated medially Footprint and other features as in FIG 23

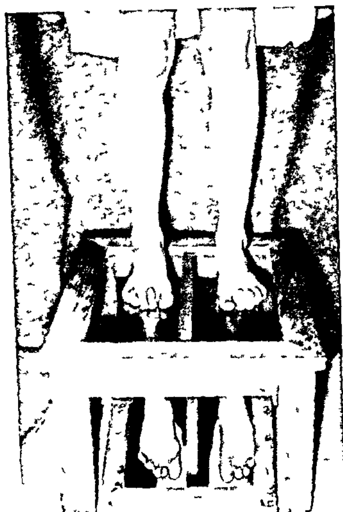


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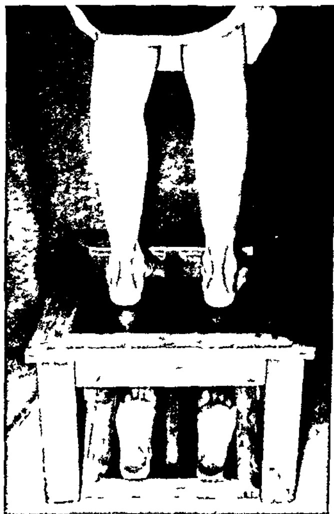


FIG 26 Posterior view of FIG 25 The eversion of calcaneum is now corrected

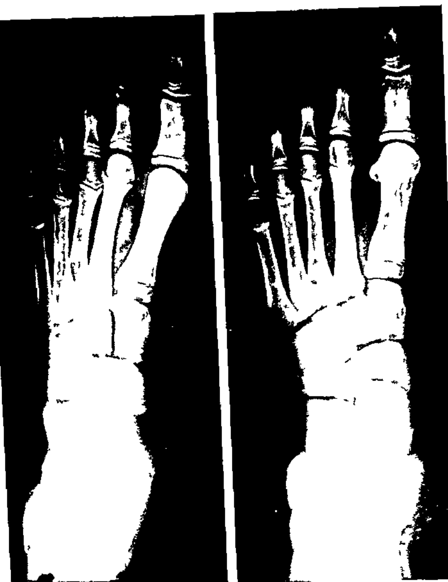


FIG 27 Radiograph of foot illustrated (*a*) Standing in the corrected position as in FIG 25 (*b*) Standing in the position of pes plano valgus as in FIG 24 The rotation of the talus is clearly shewn



FIG 28 Pes plano valgus out toeing type The knees are not rotated medially but the feet are pointing out Thus the talus is rotated medially in relation to the foot Typical valgus appearance of ankles and first stage plano valgus footprint of heel and metatarsal heads only

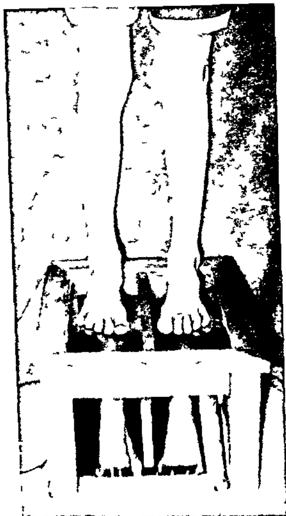


Fig 29 Correction of deformity by correcting out toeing Same case as Fig 28 Valgus deformity of ankles now corrected Lateral border of foot weight bearing but footprint not yet quite normal as there is some secondary dorsiflexion of first metatarsal



FIG 28 Pes plano valgus out toeing type The knees are not rotated medially but the feet are pointing out Thus the talus is rotated medially in relation to the foot Typical valgus appearance of ankles and first stage plano valgus footprint of heel and *metatarsal heads only*

first stage of a pes plano valgus in about a thousand cases

(Fig 24) This is the same case anterior view Similar foot print valgus appearance of ankles and a prominence on the medial side of the foot due to rotation of the talus The patellae and therefore the legs are rotated to the medial side thus rotating the talus

(Fig 25) This is the same child correcting the deformity by correcting the medial rotation of the legs and therefore the rotation of the talus The patellae now face in the direction of the feet the plano valgus deformity of the foot is corrected and the foot is no longer leaning over The outer border of the foot is now weight bearing and the foot print is almost normal It is not quite perfect for the head of the first metatarsal is not fully weight bearing This picture was taken at first attendance and she has not yet learnt to correct her balance properly and the commencing dorsi flexion of the first metatarsal can be seen This will be corrected at the end of treatment

(Fig 26) This is the posterior view of the same child Standing correcting the medial rotation of knees The calcaneum is no longer everted and the weight is coming vertically down through leg and heel

(Fig 27) This is a radiograph of the first case standing (*a*) in the corrected position (*b*) in the position of pes plano valgus illustrating the rotation of the talus

(Fig 28) This is another case of pes plano valgus showing the same features but in this case the result of out toeing The feet are pointing out but the knees are pointing forward thus the talus is rotated medially in relation to the foot (Fig 29) The deformity is corrected by correcting the out toeing

These photos demonstrate first that the deformity results from rotation of the talus for it is easily corrected by cor

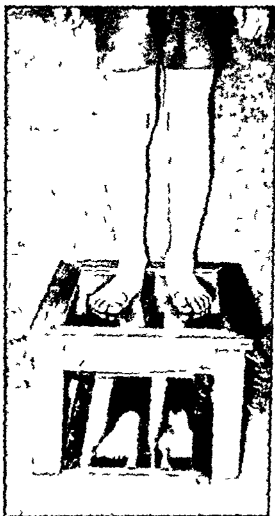


FIG 30 Second stage footprint *Old standing case of pes plano valgus with resulting dorsiflexion of first metatarsal this has allowed the lateral border of foot to become weight bearing again*

is resting on the cuneiforms The articular surface on the cuboid for the cuneiforms is not on the medial surface as stated by some anatomy books but on the supero medial and in fact is more superior than medial Therefore the cuneiforms are resting on the cuboid

Thus the foot is built up like a rough wall (or half dome) one bone resting upon another and can balance thus without muscular effort In pes plano valgus medial rotation of the talus not only carries the navicular and cuneiforms to the medial side but owing to the shape of the sub talar joint causes eversion of the calcaneum Thus the foot is leaning over and the balance is upset

Thus the primary fault in this deformity is not in the muscles but in the posture resulting in a medial rotation of talus

In the medial torsion of tibia cases there is an anatomical cause for this rotation but what of the others? The fact that the deformity is so easily corrected by correcting the balance suggests that the rotation of legs and therefore talus is itself an error of balance Both out toeing and standing with medial rotation of legs are errors of posture In the case of the latter it would appear to be associated with a slight forward displacement of the centre of gravity for in helping children to correct the medial rotation of legs they often need a little assistance to make them brace back the knees and increase the proportion of weight on the heel

If a child with this deformity rises up on his toes the natural pull of the muscles corrects the rotation and the calcaneum becomes vertical instead of leaning over If therefore a child walked rising up slightly on the toes of the carrying leg as the after coming leg came forward he would be more likely to have the foot in the position of correct balance when he came to stand In actual fact however

recting the rotation Secondly that in the first stage of a pes plano valgus the foot really is behaving as an arch with more weight on the first metatarsal segment tending to cause dorsiflexion of that segment This position of the foot is unstable and in a number of cases in the course of time the ligaments supporting the first metatarsal will slowly stretch allowing it to dorsiflex Thus this abnormal arch collapses and the lateral border of the foot becomes weight bearing again Thus at this stage which I call stage two we have a normal foot print but an obvious pes plano valgus deformity (Fig 30)

With further dorsiflexion of the first metatarsal more of the sole becomes weight bearing stage three until finally the fourth stage with the classical flat foot foot print

Thus in these cases of pes plano valgus the primary de formity would appear to be a medial rotation of talus Dorsiflexion and resulting hypermobility of the first meta tarsal is secondary to the increased weight thrown upon it

Weak muscles have been blamed for this deformity but before incriminating them one must consider their role in standing In normal standing muscle tone is not wasted for the femur is balanced on the tibia just hyperextended This fact is known to every schoolboy for a tap behind the knee of an unsuspecting person will cause him to fall It is therefore reasonable to apply the same principles to the foot

The foot is not behaving as an arch for the lateral border is on the ground The talus is resting on the calcaneum the posterior end of which is on the ground the anterior end is resting against the cuboid but its position is maintained by a saddle shaped articulation The cuboid is resting on the base of the fifth metatarsal The head of the talus is resting in the concave articular surface of the navicular which bone

In any patient with an obvious deformity but not asso ciated either with medial rotation of legs or out toeing medial torsion of the tibia must be considered

Medial Torsion of Tibia

In this condition there is a twist in the shafts of the tibiae and the feet are set pointing in so that the child is naturally pigeon toed It may be congenital or occurs at an early period during growth If such a child stands with feet parallel the talus is rotated medially by the twist of the tibia with a resulting pes plano valgus deformity Many cases of severe deformity both in toddlers and in older children will be found to result from this condition and the foot print is often fourth stage

Diagnosis is easy with the aid of the stool The child is made to stand on the stool in the intoeing position and the knees are rotated laterally either to point forward or slightly laterally depending on the severity of the torsion This will correct the deformity and the foot print will be come normal except in old standing cases with fixed deformity In these the eversion of the calcaneum and valgus appearance of the foot will be corrected the lateral border of the foot will rest on the glass but the first meta tarsal will be lifted up off the glass owing to the fixed dorsiflexion

Degrees of Deformity

The deformity of pes plano valgus was classified in four stages as regards footprint but this alone does not neces sarily indicate the whole degree of the deformity We must know in addition if the deformity can be corrected There are three stages in this

most children just stump on their heels and the feet are not used

If we watch a baby when starting to stand and it is un hampered by shoes it will constantly rise up on its toes This action is so oft repeated that in addition to the natural love of movement there is surely an endeavour to get the right balance This activity is soon prevented by stiff shoes and the child gives up the unequal struggle and just plods

Thus it would appear that stiff heavy shoes are a factor in causing this condition in that they encourage a plodding gait and a resulting lazy stance

Clinical Features

Children may be sent up for advice because they walk badly stand badly or wear their shoes badly In a few the feet tire easily or there may be actual pain In some the pain is felt in the region of the insertion of the tendo achillis

For proper examination of the feet the knees and all sides of the feet must be on view For this purpose the stool described is essential With its aid it is possible to watch the foot print as the child corrects the medial rotation

Cases of pes cavus may have a foot print similar to the first stage of a pes plano valgus but there is no valgus de formity or eversion of the calcaneum and it is not possible to rotate the legs and make the foot print normal Occa sionally one meets with a foot with obvious valgus de formity associated with medial rotation of talus but on cor recting the medial rotation although the valgus deformity is fully corrected the lateral border of the foot is not com pletely weight bearing Such a foot will be found to have a slight cavus deformity with some fixed flexion of the first metatarsal

power of the supporters of the long arches These exercises are not used because it is considered that the deformity is due to an error of balance and not due to weakness of any group of muscles Therefore repeated movements of inversion and other curious movements with a view to building up muscles are of no value and are not used

None of the routine exercises teach the child to correct the deformity Rising up on the toes may assist but is only taught as an exercise not as a habit Many of the exercises teach a false correction such as walking on the outer border of the foot One may be harmful namely bracing the foot in which the child stands feet slightly inverted and the medial side of the foot propped up by a strongly flexed first toe Thus the dorsiflexion of the first metatarsal is not corrected but on the contrary increased It seems unwise to teach a child this trick A number learn it naturally and try to prop up a foot which is falling over to the medial side as a result of a pes plano valgus by a hallux flexus The spasm will rapidly wear out the first metatarso phalangeal joint and result in a hallux rigidus

There are other routine exercises designed to promote relaxation of the calf muscles These can serve no useful purpose and are not used

In the exercises to be described the emphasis is laid on teaching the child to correct the deformity and teaching it to walk properly until both become a habit

The Exercises

1 *Standing* Every child is taught to stand feet not turned out and the medial rotation of legs corrected standing thus with patellae facing in the direction of the feet the

1 The child can correct the deformity In some they may need a little help

2 The child *cannot correct the deformity but it can be* corrected In these cases the first metatarsal has become dorsiflexed but is still mobile and can be passively plantar flexed

3 The deformity is fixed There is fixed dorsiflexion of the first metatarsal

TREATMENT

Treatment can only be effective if it corrects the medial rotation of the talus No form of arch support built up shoe wedged heel crooked heel or the like can control the medial rotation of the talus An arch support might be able to support the vertical thrust of an arch collapsing but it cannot support the horizontal thrust of a foot leaning over to the medial side All forms of support increase the weight of the shoe and make it stiffer thus encouraging a plodding gait and out toeing As these are both important factors in the causation of this condition support can be summed up as not only useless but harmful Clinical experience confirms these theoretical considerations and the results in those cases treated by support are bad Therefore the parents are advised that the shoes should be as light and flexible as possible Plimsols sandals and playing bare footed are all encouraged

Treatment in the majority of cases is by exercises but this term needs qualification for these differ in principle and practice from the routine flat foot exercises

A comparison will make this clear A large number of routine exercises are designed to encourage action and

can then be varied with games requiring agility balance and spring action on the feet During these suddenly stop at intervals to make certain that every child is developing the habit of standing correctly always Then walk again and so on until proper standing and walking become a habit

Most children can be taught this habit in a very few months All children must be seen again after three and six months A few will have lost the habit and will require a refresher course

Treatment in Infants

Children under four or five are too young to be taught in classes how to stand or how to walk If however they are given opportunity to play barefooted a large number will teach themselves They find it painful to stump with a bare heel on a hard rough surface and therefore learn to use their feet and develop foot action and balance A number will not be perfect and may require exercises when old enough

Medial Torsion of Tibia

It is important to diagnose these cases in infancy and treatment is easy at this age

They are treated by means of splints of the Dennis Browne hobble type namely boots on a bar The boots are fixed turned out the bar must not be too long and it must be bent to invert the feet and thus the lateral rotation is exerted on the ankle and not on the feet They wear these at night only and the torsion is usually corrected in three to six months During the day they should have oppor tunity to play barefooted

deformity is corrected Some children may need a little manual assistance at first a little help in rotating the knees laterally and often a slight push of the leg back and laterally in order that the weight may come straight down through leg and heel

The head of the first metatarsal must be on the ground and the toes relaxed The general posture of the child must also be supervised

This position of the feet and legs must not be taught as an exercise but as the proper way of standing It can be pointed out with truth that they will get less tired standing thus

2 *Walking* The aim to be achieved in walking is an active use of the feet Therefore the children must be taught to rise up on the toes of the carrying leg as the after coming leg comes forward Out toeing of course must be avoided and corrected where necessary Now this gait has got to be taught as a method of walking always and not just as an exercise Many physiotherapists like to teach a gait that no child could possibly do walking about the town namely bringing the heels down like a contortionist and then rising up on the toes like a ballet dancer This is useless The gait has got to be a good active gait with just that slight push up on the toes of the carrying leg as the after coming leg comes forward As most of the children have been in the habit of merely stumping on their heels and have never used their feet actively patience and tact will be needed and at first a slight exaggeration of the push up on the toes may be necessary

Thus the routine in a class would be as follows —

First standing then walking and then stand again and every child must be observed to see that he is standing correctly and if not assisted to full correction The monotony

The hypothesis that flat foot is an error of posture was discussed at the beginning of this chapter The theory that many of the causes of forefoot pain are also the result of or aggravated by an upset of posture will now be examined This upset of posture however is not due to faulty habits but is man made and the result of shoes The part of the shoe which alters posture is the heel The other parts affect the foot in other ways

The Heel of the Shoe

(*a*) A raised heel increases the proportion of weight thrown on to the forepart of the foot One would expect this to be so on the principle of lever action The matter was also tested clinically by standing patients with heels on one scales forepart of feet on another It was hoped to compare the relative weight on heel and forepart of foot first in heeled shoes then standing barefooted In practice it was found that whereas the readings in shoes were fairly constant those barefooted were very variable and inconsistent The barefooted figures therefore were regarded as of no value because the patients were not in a habit of standing in that position

It was therefore decided to compare women in Cuban heels or higher with men who wear lower heels The average ratio of weight on heels to that on forepart of feet in women was five and a half to four whereas in the men it was seven to four This appears to confirm that a raised heel does alter the weight distribution

It must not be forgotten that a standard man s shoe is not without a heel and therefore is altering the balance to some extent

Old standing Cases

In old standing cases with severe deformity the child is unable to correct the deformity so exercises would be of no avail

The deformity is therefore corrected under an anaesthetic if necessary and held corrected in a plaster cast The application of the cast requires care and the malleoli must be protected with chiropodist's felt The legs flexed at the knees hang over the edge of the table the fifth metatarsal resting on the operator s knee maintains the ankle at a right angle In the case of the right foot the first toe is held in the operator s right hand and thus the dorsiflexion of the first metatarsal and rotation of foot about talus can be corrected The left hand assures a good fit of the cast about the heel to correct any eversion of the calcaneum

The child walks in the plasters for six weeks and in doing so learns correct balance on the foot He then attends the classes for the exercises

PAIN IN THE FOREPART OF THE FOOT

Oh my poor feet

Let s Make an Opera
By Benjamin Brittain

Tired and aching feet pain in the region of the metatarsal heads are common complaints amongst women and the blame is usually laid on Rheumatism Peeping Toms who peer under tables have observed *that a high proportion of women kick their shoes off whenever they think their feet are not on view* The old Dutch painters observed this fact some centuries ago and have kept it portrayed in those *wonderful pictures full of minute details of life in their day*

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(*b*) A raised heel throws an increased proportion of weight on to the head of the longest metatarsal

Some authorities cast the blame on a short first meta tarsal for some of these troubles in the forepart of the foot This is unjust for such a metatarsal would have caused no trouble if the patient had not worn a heeled shoe In more than 50 per cent of persons the first metatarsal is equal in length to the second but even in such a foot the second

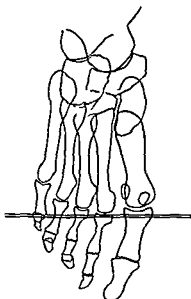


FIG 31 Tracing of a radiograph of a foot The straight line represents the floor as the metatarsal heads would strike it when the heel is raised by the heel of the shoe The first metatarsal looks short but is equal in length to the second

metatarsal projects beyond the others (Fig 31) Thus the usual pattern of the metatarsal heads is similar to that of the finger tips The index finger corresponds to the first

metatarsal the middle to the second the ring finger to the third and fifth finger to fourth and fifth metatarsals

If we rest a hand flat on the table all the finger tips rest on the table If we raise the wrist an inch and a half keep ing the fingers together only the tip of the middle finger rests on the table The other fingers must be dropped below the level of the middle finger for their tips to rest on the table In this position the fingers are arranged in the form of an arch transversely

The same mechanics must apply to the foot Standing flat on the floor (as it was designed to stand) all the meta tarsal heads can rest on the floor Standing in a shoe with a raised heel the longest metatarsal usually the second must receive an increased proportion of weight unless the other metatarsals alter their position The other metatarsal heads can only alter their position and drop down to be weight bearing at the expense of the deep transverse liga ments and this is the first stage of splaying

Thus a transverse arch in the region of the metatarsal heads is just a case of wishful thinking If there were such an arch the foot would be better adapted for standing in a heeled shoe though it might be rather uncomfortable to stand barefooted

(c) Gait A raised heel encourages a lazy type of gait which can be described as heel and flap" The heel comes down heavily on the ground and the forefoot just flaps down after it There is no active use of the foot This gait is seen at its best (or worst) with a Cuban heel

The Sole of the Shoe

If stiff it will prevent any active use of the foot

In addition it not only prevents plantar flexion of the toes but holds them dorsiflexed

The Upper of the Shoe

The purpose of the upper of a shoe is to keep the shoe on Some makers appear to be unaware of this simple fact In many casual types of shoe with no strap or lacing over the dorsum of the foot the shoe can only remain on by virtue of pressure on the toes at one end and back of heel at the other *Therefore such shoes must be too short or other wise would fall off*

Classification

An aetiological basis is used for classification It has the usual disadvantages of any classification namely that it is not quite accurate over simplifies the matter and is further complicated by the fact that one foot may suffer from several conditions at the same time

It is useful however as a basis for discussion

1 A raised heel is an important factor in

(*a*) Pain under the head of the longest metatarsal
(*b*) Splaying of metatarsal heads
(*c*) Hallux valgus
(*d*) Subluxation of a toe
(*e*) Dorsal dislocation of a toe
(*f*) March fracture

2 A short shoe is an important factor in

(*a*) Hammer toe
(*b*) Hallux rigidus (traumatic type)
(*c*) Ingrowing toe nail

3 Secondary to other diseases in

(a) Pes cavus
(b) Claw toes
(c) Dislocated toes
(d) Splaying of metatarsal heads

4 Secondary to other conditions in

(a) Hallux valgus
(b) Hallux rigidus (flexus type)
(c) Enlarged first metatarso cuneiform joint

5 Congenital in

(a) Congenital valgus fifth toe
(b) Claw fifth toe
(c) Webbed toes
(d) Banana toes
(e) Hallux valgus (a few cases)
(f) Pes cavus
(g) Results of talipes equino varus

6 Aetiology uncertain in

(a) Interdigital neuroma
(b) Freiberg s infraction
(c) Sub ungual exostosis

Considering this forbidding list in detail is most simply done by starting with —

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Pain About One or More Metatarsal Heads

A large number of different conditions may cause the patient to complain of *pain in this region*

Diagnosis This will first be considered *in those cases in* which on examination the feet are normal (That is to say normal for civilized feet having only minimal splaying or minimal hallux valgus)

(a) *Simple pain under the head of the longest metatarsal*

This is seen most frequently in women though it can *occur in men*

The pain and tenderness is localized *to the plantar sur* face of the head of a metatarsal and that metatarsal is the longest therefore usually the second sometimes the third or both If the first and fifth metatarsals are relatively short the pain may be under the second third and fourth A callosity is often present

Flexion of the toe on *the affected metatarsal is* frequently limited

The pain is worse on standing or walking relieved on sitting

The pain is due to altered weight bearing the result of a heeled shoe and the causes were outlined in the section on shoes

(b) *Dorsal dislocation of a toe*

The typical dorsal dislocation of the second toe occurs usually in association with hallux valgus *In advanced cases* the diagnosis is obvious There is a moderate to severe hallux valgus *the second toe is flexed at the proximal inter* phalangeal joint with a *hammer like deformity and often* rotated on *the metatarsal The base of the proximal phalanx* is palpable dorsal to the head of the metatarsal There is usually a callosity under the head

Occasionally both the third and second toes may be dislocated

In the earlier stages the deformity may be less obvious The hallux valgus may not be severe and is symptomless The complaint is one of pain under the head of the second metatarsal The second toe may not have acquired the hammer like appearance but diagnosis can be established by palpating the base of the proximal phalanx of the toe dorsal to the metatarsal head

(c) *Subluxation of a toe*

Is more common in women but does occur in men The patient will complain of pain in the region of the second or third metatarsal head depending upon which is the longest

There will be no tenderness over the head but the pain will be localized to the metatarso phalangeal joint and will be reproduced by pushing the base of the toe dorsally on the head of the metatarsal The joint will be found to be lax so that the toe can in fact be subluxated

(d) *March fracture*

Is seen more frequently in women than men As would be expected the longest metatarsal is the one affected for this receives the continual hammer hammer on the hard high road from the heel and flap ' gait The tenderness is localized to the neck of the metatarsal and there is nearly always some oedema of the dorsum of the foot

(e) *Interdigital neuroma*

The pain may be severe and is typically felt on relief from weight bearing

Tenderness is in the interdigital cleft most commonly third to fourth

(f) *Freiberg s infraction*

This again favours the longest metatarsal and should be

expected if there is enlargement of the metatarsal head with limited movement of the metatarso phalangeal joint A radiograph will confirm the thickened and stunted meta tarsal head resulting from an osteochondritis during the period of growth

Cases With Some Deformity of Feet

(a) Splaying of metatarsal heads

A certain amount of splaying can result from the mech anical factors of altered weight distribution etc discussed under shoes and certainly does judging by its frequent occurrence in women

In severe cases there has usually been another factor namely a secondary arthritis polyarthritis or the like re sulting in softening of ligaments during the subacute stage The past history and condition of other joints would con firm such a diagnosis These cases are often associated with a pes plano valgus which may be severe The pain is not localized to the head of the longest metatarsal because the metatarsals are no longer firmly bound together and in line but on the contrary the shorter ones have dropped down with resulting splaying to be fully weight bearing

Thus there may be pain under all these mobile ill pro tected metatarsal heads often with large callosities Not infrequently the most pain is under the heads of the first and fifth

(b) Pes cavus and claw toes

In pes cavus the metatarsals are abnormally flexed on the tarsus If all are flexed the foot print will be the classical one of heel and metatarsal heads only but if the chief flexion is in the first metatarsal segment the lateral border will be

weight bearing and the footprint normal Such a foot will however be in slight varus The condition may be con genital

At first there will be no clawing of toes but this is liable to develop and get worse as they get older

It may result from various causes prolonged illness with the feet lying flexed in bed fractures with some ischaemic contracture polyarthritis and rheumatoid arthritis In all these there is usually clawing of toes which may be severe and in the rheumatoid cases often associated with disloca tion of toes especially the fourth

Pes cavus will cause pain under the metatarsal heads first because the metatarsals are striking the ground at a steeper angle owing to the flexion of the shafts secondly because the clawing of the toes renders the heads more prominent and the toes cannot act These effects are of course aggra vated by a raised heel

Treatment of Pain About Metatarsal Heads

There being a large number of different causes for pain in this region treatment must depend upon the cause in each case The old adage must also be remembered treat the patient not just the disease

Catch phrases like a dropped metatarsal arch lead merely up the garden path which is paved with mass produced supports

Simple Pain Under the Head of Longest Metatarsal

Theoretically the treatment is simple The pain is due to an altered weight distribution the result of a raised heel throwing an increased proportion of weight on to the meta tarsal heads especially the longest Therefore the patient

is instructed to wear a shoe without a heel and he is also taught to walk properly and thus avoid the hammer hammer on the metatarsal heads of the heel and flap gait Such a treatment is possible and effective in men but they form an extremely small proportion of the sufferers from this condition In women such a line of treatment would not be tolerated because the dictates of fashion would prevent the wearing of such a shoe and also adaptive shortening of the calf muscles would make it very uncomfortable to wear Other means of altering the weight distribution must therefore be found The simplest method is by means of a looped pad A piece of sponge rubber is cut to fit exactly behind the metatarsal heads and kept in place by a loop going

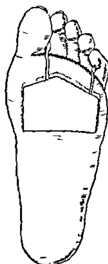


FIG 32 Illustration of looped pad

round the second third and fourth toes (Fig 32) This relieves the weight on the head of the longest metatarsal

and spreads it to the necks of all The various forms of so called metatarsal arch support act in exactly the same way not by supporting any arch but by altering the weight distribution The patient should be taught to walk in addition

Dorsal Dislocation of a Toe

The treatment is operative

Subluxation of a Toe

The looped pad is also effective for this condition but the loop goes round the affected toe only

March Fracture

Walking in a plaster cast for four weeks allows consolidation of the fracture but must be followed by lessons in proper walking

Interdigital Neuroma

The treatment is operative If this is contra indicated for any reason the looped pad may relieve symptoms

Freiberg's Infraction

The treatment is operation

Splaying of Metatarsal Heads

It is not possible to correct the splaying by any form of treatment In early cases physiotherapy may assist in delaying its progress If the condition is associated with pes plano vagus the patient should be taught to correct this as far as possible by *correcting the medial rotation of legs* The patient should also be taught to walk properly

Faradism to the intrinsic muscles is also useful but the usual method of applying this with faradic foot baths is

not effective if there is any clawing of toes and there usually is The method advised is as follows The foot is placed on a block of wood cut to the line of the metatarsal heads with the toes projecting over the edge of the block Slight pres sure on the foot and therefore on the metatarsal heads will correct the clawing and a true intrinsic action can then be obtained by surging in the usual way (Ref I)

In old standing cases treatment is palliative and there fore again a question of relieving the increased weight on the metatarsal heads The looped pad may be satisfactory but in a severe case a shoe with an insole of the so called combined metatarsal and valgus support type distributes the weight over the whole sole of the foot thus relieving the metatarsal heads

Pes Cavus and Claw Toes

If the condition is at all severe and the patient is not too old operation should be considered Thus it is better to operate early and not wait until there is fixed clawing of the toes

In mild cases with slight clawing of toes physiotherapy may help namely faradism to the intrinsic muscles but it must be carried out with the foot on a block as described The looped pad may also be useful

In older patients the treatment must be palliative and it is again a question of altering weight distribution A well fitting valgus insole is effective in distributing the weight to the sole of the foot thereby relieving the meta tarsal heads Therefore the patient is given a surgical shoe with such an insole and a pouched upper to avoid pressure on the clawed toes

Considering the treatment of pain under the metatarsal heads as a whole an interesting point emerges namely that

what has been commercialized as support can play a useful part in altering weight distribution and thereby counteracting the effect of a raised heel in certain cases

This was amusingly demonstrated when the health service first came in Patients who had previously bought their own arch supports and therefore presumably had obtained some measure of relief from wearing them came up to hospital to get them free The patients were all under the impression that they suffered from dropped arches and therefore needed support The majority of the patients were suffering from pes cavus a few from splaying of metatarsal heads None were suffering from pes plano valgus

Pain About the First Metatarso phalangeal Joint

The usual complaint in this situation is a bunion Though usually associated with hallux valgus it may also form over the enlarged joint resulting from hallux rigidus

Hallux Valgus

Some degree of this condition though not universal in civilized women past middle life is fully prevalent Men are affected but rarely

The primary deformity is splaying of the first metatarsal and the lateral deviation of the toe is secondary to this Anatomically the medial sesamoid ligament has stretched allowing the head of the first metatarsal to move medially in relation to the sesamoids (Ref 2)

The great preponderance of women sufferers does suggest a raised heel as an important factor causing splaying It must be confirmed however that the condition does occcur in young girls when still wearing a similar low heel to the boys The deformity at this age is often regarded as con

not effective if there is any clawing of toes and there usually is The method advised is as follows The foot is placed on a block of wood cut to the line of the metatarsal heads with the toes projecting over the edge of the block Slight pres sure on the foot and therefore on the metatarsal heads will correct the clawing and a true intrinsic action can then be obtained by surging in the usual way (Ref I)

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Hallux Flexus

This condition is seen in children The first toe is held flexed on the metatarsal by firm spasm and there may be complaint of pain in that joint The flexion of the first toe is an attempt to correct a pas plano valgus deformity albeit incorrectly It has however the effect of masking the de formity by propping up the foot on the medial side and from the back the heel appears vertical instead of leaning over The dorsiflexion of the first metatarsal is not corrected however This rigid flexion of the first toe plays havoc with the bearings of the first metatarso phalangeal joint which wears out very rapidly resulting in hallux rigidus

TREATMENT

Hallux Valgus

In those cases occurring in children secondary to pes plano valgus the condition can be cured by teaching them to stand with the pes plano valgus corrected provided the deformity is still in a very early stage

In the elderly or a mild deformity in an adult relief can be obtained by protecting the bunion from pressure This can be achieved by a pad of felt one by one and a half inches so placed that it fits exactly along the medial side of the shaft and neck of the first metatarsal This can be kept in position either by hanging from the first toe by means of a loop or be stuck inside the upper of the shoe

Operative Treatment

Any operation to be successful must make a new joint for the old one is worn out and exhibits some degree of erosion of cartilage It must correct the splaying of the first

genital in origin If however the foot is properly examined it will be found that there is an associated pes plano valgus and what is more that if the child is made to correct the *plano valgus in the usual manner by correcting the medial* rotation of legs the hallux valgus is rectified if not too old standing On allowing the child to let the deformity recur one can observe that the increased weight thrown on the first metatarsal causes it to splay a fact that can be con firmed with radiographs *It is interesting that whereas* hallux valgus occurs but rarely in boys pes plano valgus is common

Hallux Rigidus

In hallux rigidus the first metatarso phalangeal joint is worn out There is erosion of the articular cartilage osteo phytes tend to grow at the articular margin and movement of the joint becomes gradually more limited

The limitation of movement may give rise to symptoms in those who take a proper step in walking that is rising up on the toes but they are few Others may find that whereas they are pain free in a low heeled shoe they get pain stand ing in a shoe with a higher heel More commonly the symp- toms are due to pressure of the shoe on the osteophytes and these can be large and form a marked prominence on the dorsum Hallux rigidus may result from trauma or it can follow *a hallux flexus The latter origin is less common* The trauma may be the usual type dropping something on the toe or the like but as it takes years for the condition to develop a history is not always forthcoming Another common type of trauma is repeated stubbing of the toe in *an ill fitting* shoe Not seldom it will be found that the affected foot is longer than its fellow and as a result of that perversity in human affairs the shorter foot has always been measured for fitting shoes

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metatarsal and if as in many cases the metatarsal is dorsi flexed as a result of a pes plano valgus this must be corrected as well An operation which fulfils these requisites is being tried with satisfactory results to date using the base of the proximal phalanx as a graft to arthrodese the first metatarso cuneiform joint in the correct position

If the second toe is dislocated the base of that phalanx is removed in addition

Hallux Rigidus

Palliative treatment Pressure of the shoe on the exostosis can be relieved by a pad as described for hallux valgus It may have to be placed more dorsally

If the symptoms are due to pain in the joint they may be relieved until the movements of the joint become more limited by lowering the heel of the shoe Alternatively they may be relieved for a week with a metatarsal bar (the bar is then worn flat) For a long term policy the sole must be stiffened and a rocker incorporated in it This is heavy and ugly and patients usually prefer operation The Keller type is satisfactory and is the treatment of choice also for those cases with a bunion

Hallux Flexus

This must be diagnosed early and treated for what it is namely a pes plano valgus with fixed deformity Therefore the foot is manipulated into the corrected position and held there in a walking plaster but this is kept on two months rather than six weeks If the case is late and the first metatarso phalangeal joint is worn out a new one must be made as in the operation for hallux valgus and at the same time the dorsiflexion of the first metatarsal must be corrected by means of the graft

Enlarged First Metatarso Cuneiform Joint

This condition is not infrequent and is seen both in child ren and adults The enlargement is chiefly in the cuneiform where the base of the first metatarsal rides up on it

The only symptoms are due to pressure of the shoe on this prominence and may result in a bursa

The cause of the condition is uncertain A possible ex planation is that it is an incorrect correction of a mild pes plano valgus deformity The child has managed to hold the first metatarsal flexed thereby preventing dorsiflexion but at the expense of that joint

In most cases padding the tongue of the shoe is sufficient If the symptoms necessitate operation it is better to arthro dese the joint as recurrence is apt to occur after simple removal of the prominence

Hammer Toe

In its classical form there is fixed flexion of the proximal interphalangeal joint of the toe and usually a corn on the dorsum from the rub of the shoe Most commonly the second toe is affected and it is frequent in those persons in whom the second toe is longer than the first and therefore cramped by the shoe In other cases the hammer deformity may follow some degrees of clawing It is also possible to have a hammer deformity of the distal interphalangeal joint with fixed flexion of the terminal phalanx

Treatment is operative The toe must not be amputated for amputation of a toe can lead to many troubles The proximal interphalangeal joint is arthrodesed straight which also shortens the toe The spike operation is used but is modified by using a special tap to cut a dowel in the head

and distal shaft of the proximal phalanx which will fit exactly into a hole of the same diameter drilled in the base of the middle phalanx

In the case of a hammer deformity of the terminal phalanx *the terminal phalanx can be amputated*

Ingrowing Toe Nail

This is put in the short shoe category because bunching the toes together especially in a sweaty foot is a factor but it is not the only one The first toe is nearly always affected and either the medial or lateral edge of the nail is pressing into the fold of skin causing pain and often some resulting sepsis

The only condition that can simulate this is a laterally placed sub ungual exostosis

Simple removal of the nail does not cure this condition It simply recurs when the nail grows again One might add *that in like fashion simple removal of nail does not cure an* onychogryposis This plain fact does not appear to be generally taught

The treatment is operation A wedge of the whole lateral (or medial) border of nail cuticle and nail bed is removed The rest of the nail is left A cunning stitch over half inch *lengths of fine rubber tubing will bring the whole together*

Congenital Valgus Fifth Toe

The results of trying to correct the deformity by splintage when the child is small are not worth the effort Operation should be undertaken *when the child is old enough but* must be thorough

Webbed Toes

Mothers are often worried if their children have webbed toes They cause no disability and are best left alone I always comfort the mothers telling them the children will be better swimmers I hope it s true

Banana Toes

This name is suggested for a condition which is seen moderately frequently at out patients and the mothers are always very worried

There is lateral flexion of a toe and it is bent towards its fellow like a banana Often the second and third are bent towards each other

The condition causes no symptoms is seldom seen in adults so is best left alone

Sub ungual Exostosis

Occurs in the first toe near the tip causing a slight de formity of the nail It is removed by operation

The Heel

Osteomyelitis can occur in the calcaneum and so can cysts

Text books make much ado of an apophysitis of the epiphysis It must be very rare

There are two common causes of pain in this region in children One is a pes plano valgus which has been dis cussed and may be associated with pain in the region of the insertion of the tendo Achillis

The other is due to the rub of the heel of the shoe and there may be an enlarged bursa under the skin over the region of the insertion of the Achillis tendon These cases

and distal shaft of the proximal phalanx which will fit exactly into a hole of the same diameter drilled in the base of the middle phalanx

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CHAPTER 5

CONCLUSIONS

Awake my soul! stretch every nerve
and press with vigour on
—*Philip Doddridge*

Names

IN *general practice names of diseases are important* Patients expect a name for whatever condition may be troubling them and if one is not forthcoming may have doubts about the erudition of the practitioner Therefore for the patient s peace of mind and also to enable the practitioner to handle the patient he must produce a name Now whereas some names describe definite diseases and are in fact a positive diagnosis carrying a logical treatment many of the names used in medicine are like a tale told by an idiot full of sound and fury signifying nothing

Although the use of such names may be politic at times the practitioner should not delude himself into the belief that he has really achieved a diagnosis by the application of such a label

Support

A very large number of patients appear to be under the impression that their varied painful conditions can be treated by means of support What actually is meant by this term support? We have already observed that in the case

are often sent up labelled a spur or exostosis of the cal caneum Actually no such pathological condition is present the fact of the matter being that these children possess a rather knobby heel which does not fit a standard shoe

As it is not possible to obtain a shoe to fit the foot treat ment consists of an operation to make the foot fit the shoe The prominent part of the tuberosity lateral to the tendo Achillis is chiselled off and also as much bone as possible beneath the tendon above its insertion

The Painful Heel (Adults)

Complaint of pain under the heel is common The locali zation of tenderness is constant being under the heel just anterior to the tuberosity on the medial side

These cases are usually sent up labelled a spur of the calcaneum Actually only about 30 per cent of the cases have a spur and a spur is seen in an equal number with no symptoms

The tenderness is in the region of the origin of the ab ductor hallucis from the tuberosity of the calcaneum It is therefore more probable that the pain is due to a tender spot in the origin of this muscle from over use in one position like a tennis elbow

Treatment by means of a novocain injection into the tender area followed by a course of deep friction and full range of movement will effect relief

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1 Gervis W H *Foot Ailments Their Pathology and Physical Treatment* (Journal Chartered Society of Massage and Medical Gymnastics August 1943)

2 Haines R W and McDougall A *Anatomy of Hallux Valgus* (Journal of Bone and Joint Surgery Vol 36 B No 2)

organic basis for the pain These patients exaggerate their symptoms because their doctor (or doctors) has failed to establish a diagnosis or effect a cure Thus sub con sciously they are trying to help him by making the symp toms more obvious but of course in doing so often mask the real trouble The first essential of treatment is to treat the organic basis of the pain

Of course such patients can be very difficult but surely the fascination of medicine as any other game is its difficulties

Prevention Is Better Than Cure

Throughout this book it has been shewn that many of the minor ills of this life are the result of bad posture the continual wearing of bearings in one position combined with the loss of the habit of stretching and putting trunk and limbs through full range of movement to maintain the natural greasing and elasticity of the parts

On this theory many of these conditions could be pre vented or their incidence diminished

This ideal however can only be achieved by education of the public and the methods that readily suggest themselves are first propaganda and secondly physical training in schools

The idea of propaganda is naturally repugnant to any right feeling man We must however face the facts namely that this country is already overflowing with propaganda Unfortunately it is all of the wrong kind promulgating ill health and not very accurate at that Magazines and papers abound with advertisements for medicines lamps embroca tions and the like all purporting to cure rheumatism neu ritis fibrositis lumbago etc in fact all the names that do not really mean anything very definite

of the foot so called supports merely alter the weight dis tribution thus relieving the metatarsal heads of the in creased weight thrown upon them by the raised heel In other parts of the body the term is often applied to some form of apparatus designed to limit movement Before pre scribing any such thing it must first be decided if it is neces sary *and beneficial to limit movement and secondly if the* apparatus does in fact perform that function

The most widely used form of support is just a crepe bandage or elastoplast round the affected part *This is not* really a form of support but a procedure to diminish the amount of swelling and oedema which might occur Such a bandage may be very useful for a short period immediately after an *injury* It is not however the whole treatment and the resolution of the swelling will occur much more quickly with restoration of movement than with continued *bandaging*

Rest

Rest is not a universal panacea but may be useful in certain conditions for a period It is not the whole treat *ment however but only a part of it In like fashion tablets* to relieve pain may be useful on occasions but it is more important to treat the cause of the pain

Hysterical (or by any other name)

Labelling a patient as hysterical just because her symp toms and signs fail to conform to some text book pattern may save trouble but is unjust to the patient It is also bad medicine

True hysterical cases do of course occur but they are not at all common

Patients are frequently seen in whom there is some exag geration *of their symptoms* but there is all the same an

the practice of full range of movement is not developed There is a rudimentary idea that some parts of the body are not normally put through full range of movement this conception however is disguised as usual by the terminology These movements are designated as 'compensatory movements and are defined as those movements which are intended to compensate for the limitations imposed on growth and development by inadequate opportunities for movement whether at home or in school (Ref) This definition fails to emphasize the fact that the child is going to grow up to live in a civilization the main feature of which is a fixed flexed position of the body Also the exercises are only taught for the today of childhood and take no thought for the tomorrow when the child has grown up and is becoming stiff and flexed Now the object to be achieved in these exercises is to re develop the stretch reflex which all animals possess but has been largely lost in man The child must be taught to stretch and put neck and back through full range of movement especially full extension It must also stretch arms right round to put shoulders and shoulder girdles through full range These movements must not be taught as physical jerks but as the slow stretch that animals practise

They must not be taught just as exercises to be done at P T and forgotten ever after but as a habit to be developed for life They must not be taught as something the child must do because they are good for it thus making the child either a prig or health conscious but as movements that are pleasant to do and which result in a refreshing and agreeable feeling to those parts of the body Taught thus especially if the instructor possesses that great gift enthusiasm a fair proportion of children may remember and stretch in adult life

As a result of this propaganda patients are led to believe that these names signify authentic diseases and consequently attribute their symptoms to one of these maladies In this present primitive state of civilization we cannot get rid of these advertisements so surely the only solution to the problem is to have a counter blast of propaganda towards positive health as opposed to that for ill health Something on the following lines might be beneficial

Suggested Example of Propaganda

(Headed by a picture of a dog stretching)

Your dog stretches so does your cat and so do all animals Do you? You oil your bicycle you oil and grease your car what about your own bearings?

In Nature the greasing mechanism is automatic but it is only fully efficient with full range of movement That is why your dog stretches When did you last bend your head and neck right back? When did you last stretch right back hollowing your back as far as it would go or bend it fully? When did you last swing your arms right round?

Because you have not done these things your joints are getting stiff You read advertisements for patent medicines and the like which tell you that these pains are due to rheumatism or the like so you imagine you are suffering from some terrible disease The probability however is that you have merely let yourself get stiff so try stretching

Prevention is better than cure Always do a stretch after doing the washing up

Physical Training in Schools

In physical training every endeavour is made with exercises and games to exercise each part of the body in turn but

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Physical training instructors could also assist in another way in the prevention of back troubles in later life It was stressed earlier that osteochondritis of the spine was the cause of much of this trouble Therefore if any child can not touch its toes it must not be forced to do so with the mistaken idea of stretching short hamstrings The ham strings are not short they are contracted by reflex spasm The child must stop physical training at once and be re ferred to an orthopaedic clinic for treatment

Flat Foot

In the previous chapter it was suggested that flat foot is an error of posture A lazy type of gait was also cited as a factor in causing this condition and comment was made that generally speaking school children walk very badly Surely it should be possible in physical training to teach children to walk properly and to stand correctly If this were done it would diminish the incidence of flat foot very considerably

The gait that must be taught is the active gait described using the foot and rising up on the toes of the carrying leg

The posture of the children must be supervised when standing The knees watched closely and that prevalent habit of rotating the legs medially corrected Out toeing must also be discouraged Thus the children should stand patellae facing in the direction of feet the whole body in a position of good posture that is to say good balance

REFERENCE

Planning the Programme (Physical Education in the Primary School Part Two H M S O)